Public Hearing (8/21/12)
Policy for Toxicity Assessment and Control
Deadline: 8/21/12 by 12 noon

Heal the Bay

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August 21, 2012

Chair Hoppin and Board Members
State Water Resources Control Board
1001 I Street, 15th Floor
Sacramento, CA 95814
[Sent via email to commentletters@waterboards.ca.gov and phann@waterboards.ca.gov]

Re: Comments on the Policy for Toxicity Assessment and Control Public Review Draft Dated June 2012

Dear Chair Hoppin and Board Members,

On behalf of the undersigned groups, we submit the following comments on the draft *Policy for Whole Effluent Toxicity Assessment and Control* ("Draft Toxicity Policy" or "Draft Policy") released June 2012. We appreciate the opportunity to provide these comments.

A statewide toxicity policy is desperately needed and is long overdue. In fact, this policy could arguably be the most important action that the State Water Board will consider this year. As seen on the map of impaired waterbodies from the *2010 Integrated Report* — Map of Impaired ("303(d) Listed") Waters for Toxicity in California (Attachment 1), captured from the State Water Board's own website, numerous waterbodies throughout the state are impaired by toxicity. In fact, toxicity has been observed in all nine regions according to a report released by the Surface Water Ambient Monitoring Program (SWAMP) November 2010 entitled *Summary of Toxicity in California Waters: 2001-2009*.[1] Of the 992 sites assessed by the SWAMP program, 473 sites (48 percent) had at least one sample where toxicity was observed and 129 sites (13 percent) were classified as highly toxic.[2]

While considering a 2003 petition by the Los Angeles County Sanitation Districts that challenged the overall propriety of numeric limits for chronic toxicity in discharge permits, the State Water Board declined to make a determination on the issue and promised to make a final ruling on the matter within 12 months. Thus, we have been eagerly awaiting its release for nine years, writing dozens of comment letters asking for a policy, and seeing renewed publicly owned treatment works (POTW) NPDES permits adopted without numeric effluent limits for chronic toxicity. Meanwhile, the list of California waters impacted by toxicity lengthens. Toxicity limits are the safety net in discharge permits. These limits would identify discharges with toxic effluent that have aggregate negative impacts on aquatic life, even though they may meet the limited list of California Toxics Rule ("CTR") priority pollutant limits. We are pleased the State Water Board is moving forward with a toxicity policy at this time.

The undersigned are very supportive of many aspects of the Draft Policy. It is based on sound science, such as the whole effluent toxicity (WET) test methods, which has withstood peer-

[1] J. Hunt et al. Summary of Toxicity in California Waters 2001-2009 Prepared for Surface Water Ambient Monitoring Program November 2010. Page 2.
[2] *Ibid.* 2

review and legal challenges.[3] We support the Draft Policy's use of the EPA's Test of Significant Toxicity statistical method ("TST Method"), which is a peer-reviewed statistically superior approach to current methods because it regulates the instances of both false positives and false negatives that may result from toxicity testing.[4] The TST Method also encourages transparency and good lab practices for improved statistical certainty. In addition, conversion to this method would not put significant additional cost burden on permittees for testing because the proposed testing methods are less expensive than current methods. The TST Method also provides a clear objective that can easily be translated into limits that Regional Water Boards can incorporate into permits.

However, we are disappointed that the majority of the concerns we expressed in our January 21, 2011 letter have not been addressed. First, the proposed toxicity limits do not apply to all NPDES dischargers who contribute to toxicity in our state's waters. Specifically, dischargers not meeting the reasonable potential analysis (RPA), dischargers to channelized waterways, and storm water dischargers are not required to meet the numeric toxicity limits. Also, we are concerned that the Draft Policy does not facilitate timely enforcement of the chronic toxicity effluent limitations. Finally, we urge the State Water Board to remove the allowance for compliance schedules within the Draft Policy. Toxicity limits should be implemented as soon after adoption and approval as possible, so dischargers get on an immediate path to water quality standards attainment. These comments and others are detailed below.

I. Numeric Effluent Limitations

The toxicity objectives established in the Draft Policy should be included as effluent limits in all NPDES permits.

We are deeply concerned that the Draft Policy applies the chronic toxicity limits to major POTW facilities, but not to storm water permittees (both municipal separate storm sewer systems ("MS4") and industrial), or POTWs deemed "insignificant dischargers." This is a major flaw because the Draft Policy will not place limits on some dischargers having the greatest potential to contribute toxicity to waterways. The presumption under the Clean Water Act is that numeric effluent limits will be the tools used to limit the discharge of pollutants, particularly toxic ones. (CWA Section 101(a)(3)). A numeric toxicity limit is the most protective regulatory strategy for aquatic life because it provides a clear and enforceable standard. Thus, the Draft Policy should require toxicity limits for all NPDES dischargers, with limited exceptions.

[3] In the United States Court of Appeals decision on *Edison Electric Institute, et al., Petitioners v. Environmental Protection Agency, et al. Respondents* 391 F.3d 1267, 4-5 (D.C. Cir. 2004), the court sided with EPA, stating "In designing and refining the WET test methods, EPA sought to minimize the effect of organic idiosyncrasy by taking experimental and statistical precautions. The crux of petitioners' complaint is that EPA has not gone far enough. We disagree, and therefore deny the petitions for review."

[4] USEPA. 2010. National Pollutant Discharge Elimination System Test of Significant Toxicity Technical Document. EPA/833/R-10/004. USEPA Office of Wastewater Management. June 2010 Washington DC. "This objective requires additional RMDs regarding acceptable maximum false positive (ß using a TST approach**)** and false negative rates (a using a TST approach)." Page xii

The Draft Policy should include effluent limits and monitoring requirements for storm water dischargers.

The Draft Toxicity Policy has taken a big step backwards from the previous draft, as it no longer *requires* toxicity monitoring requirements in MS4 and individual industrial storm water permits; it merely *recommends* that these dischargers implement a monitoring program (Draft Policy at Page 13). Our primary concern, as stated in the past, is that the Draft Policy does not require any numeric toxicity limit for stormwater dischargers. Excluding storm water dischargers from the Draft Toxicity Policy requirements is inappropriate and will be truly ineffective in reducing many instances of toxicity throughout the state.

Storm water and urban runoff often contain metals, oils, pesticides, and other contaminants that can be extremely toxic to aquatic life. For example, the contaminants in both wet-weather and dry-weather flows into Santa Monica Bay have elicited toxic responses in marine organisms such as giant kelp, red abalone, and purple sea urchins.[5] Despite the numerous narrative water quality standards aimed to protect beneficial uses, there are many California waterways listed as impaired for aquatic toxicity on the CWA §303(d) list, as shown in Attachment 1. MS4 discharges are often a source of this receiving water impairment. In Region 4, for instance, almost all of the TMDLs established for toxic pollutants and "toxicity" list MS4s as a responsible party. Thus it is clear that MS4 permittees have the potential to cause or contribute to aquatic toxicity and should be regulated appropriately.

We urge the State Water Board to require numeric toxicity limits for storm water dischargers within the Draft Policy. Also, the Draft Policy should reinstate the toxicity monitoring requirements, as was included in previous drafts. At the very least, the Draft Policy should encourage Regional Boards to evaluate storm water discharges to determine if there is reasonable potential to cause or contribute to aquatic toxicity. If toxicity is found, Regional Water Boards should have the ability to include a numeric limit, as was the case in the October 2010 draft of the Draft Toxicity Policy that stated "the applicable Water Board has the discretion to apply numeric effluent limitations for toxicity in these permits" (November 2010 Draft Policy at Page 13). Although this may be the intent, it is unclear.

The Draft Policy should include provisions to minimize toxicity caused by agriculture.

Likewise, toxicity effluent limits and monitoring requirements should also apply to agricultural dischargers, another major source of toxicity in the environment. According to SWAMP's November 2010 report, agricultural and urban areas had significantly more sites with a greater magnitude of toxicity than receiving waters in less developed areas.[6] In the 2000 *National Water Quality Inventory*, states reported that agricultural nonpoint pollution is the leading source of water quality impacts on surveyed rivers and lakes, the second largest source of impairments to

[5] Bay, S., D. Greenstein, S. Lau, M. Stenstrom, and C. Kelley. 1996. Toxicity of dry weather flow from the Santa Monica Bay watershed. Southern California Academy of Sciences 95:33-45, Quoted in Impacts of stormwater discharges on the nearshore benthic environment of Santa Monica Bay. By Kenneth C. Schiff, et al. Southern California Coastal Water Research Project Biennial Report 2001-2002

[6] Ibid. 3.

wetlands, and a major contributor to contamination of surveyed estuaries and ground water.[7] Attachment 1 clearly illustrates that most waterbodies in the Central Valley are impaired by toxicity.

Identification of the sources of toxicity is necessary before successful source abatement measures can be implemented as required under the SIP. The Draft Policy merely recommends channelized dischargers monitor for chronic toxicity four times per year. At a minimum, the Draft Policy should *require* monitoring. A discharge that does not violate a discrete, chemical-specific water quality standard but nevertheless causes or contributes to acute or chronic toxicity should trigger the discharger to initiate a toxicity identification evaluation (TIE) or even some less formal procedure to identify the nature and source of the runoff toxicity.

The threshold between major and insignificant dischargers should be 500,000 gallons per day.

The Draft Policy considers non-continuous dischargers and dischargers that discharge less than one million gallons per day (MGD) as "insignificant dischargers." This threshold is inappropriately high and arbitrary. The Draft Policy should not assume "major POTW" facilities are the only facilities with a high risk of toxicity. The discharge of a lesser amount, such as 900,000 gallons per day in a stream or enclosed waterbody is hardly insignificant. Many types of facilities that discharge much less than one MGD have clear reasonable potential to contribute to exceedances of standards.

Also, the Draft Policy defines "insignificant dischargers" as "discharging entities that are deemed a very low threat to water quality by the applicable Water Board." However, the Draft Policy does not give clear criteria for what constitutes a "low threat." The criteria for being deemed a "major" or "insignificant" discharger should not be based solely on effluent flow; there are other factors related to water quality that should be considered, such as the nature of the discharge and its contribution to flows in receiving waters. Non-major dischargers can be the dominant source of flow in a waterbody, thus they can have a huge impact on aquatic life if they discharge toxic effluent. Also, many regions of the state only have POTWs discharging less than one MGD. Under the Draft Policy these areas would have much less protection and would not be subject to the same regulation as other POTWs, even though these "insignificant dischargers" may have a significant impact on a waterbody. Thus, the Draft Policy should incorporate chronic toxicity objectives as enforceable limits to non-major and intermittent dischargers as well (at least for all discharges of 500,000 gallons per day or greater). At the very least, the State Water Board should add clarifying language and criteria for which discharges constitute a "low threat" and require monitoring for POTWs discharging more than 500,000 gallons per day, regardless of the outcome of the RPA.

The Draft Toxicity Policy should not employ the reasonable potential analysis (RPA) approach to determine if numeric limits should be placed in NPDES permits.

[7] Quoted in USEPA, 2005. Protecting Water Quality from Agricultural Runoff. EPA 841-F-05-001 USEPA Nonpoint Source Control Branch (4503T). March 2005 Washington, DC.

The Draft Policy requires a RPA before requiring toxicity limits, except for major POTWs. As mentioned in previous comments, the Draft Policy should eliminate the use of RPA for determining whether or not to include toxicity limits. Reasonable potential to cause or contribute to aquatic toxicity should be presumed for all discharges based on the nature of the discharge using the Boards best professional judgment (BPJ). Most importantly, toxicity tests act as a "safety net" in the NPDES program. Toxicity tests can capture potential impacts from the aggregate effects of low concentrations of multiple contaminants and impacts of contaminants that are not given limitations in NPDES permits. The California Toxics Rule only contains 126 priority pollutants despite the fact that tens of thousands of chemicals are in use in a given year, and only a small subset of the priority pollutants are included with effluent limits in permits. Since toxicity testing should capture the toxic effects of any constituent, it is the only water quality test that addresses complex effluent from many POTWs and agricultural and storm water runoff. Thus, it is critical that toxicity monitoring and toxicity effluent limits exist in all NPDES permits, regardless of RPA analysis findings. Furthermore, we do not see the logic in adding the requirement to conduct RPA, given that previous toxicity limits (acute limits in particular) were included in NPDES permits without the RPA requirement.

The Draft Policy should include the definition of "small community" established in the California Water Code.

The Draft Permit offers exclusions from performing RPA for dischargers listed in Part III(A)(9) of the Draft Policy (e.g., small communities, insignificant dischargers, categorical exceptions, and case-by-case exceptions) (Draft Policy at Page 6). The Draft Policy defines small communities as communities with populations of 20,000 or less, and a median household income (MHI) below 80 percent of the statewide median household income. It also allows communities with MHI above 80 percent to be considered disadvantaged on a case-by-case basis. According to the State Water Board's revised economic analysis, 53 out of the 465 NPDES dischargers in California are expected to be classified as "small communities" under the Draft Policy.[8] This is a significant percentage of the state's POTWs and allows for a loophole in the policy. As an example, assuming an average per capita water consumption of 232 gallons per capita per day in California[9], subtracting 42 percent of this amount for residential demand for outdoor usage[10], a community of 20,000 people could generate an average of 2.6 MGD, which is over two-and-a-half times the threshold of major discharger. There is no reason a community generating more than one MGD should be excluded from toxicity limits. For this reason, we believe the Draft Policy should, instead at a minimum, narrow the definition of "small community" by utilizing the definition of established under Water Code section 13385, subdivision (k). As described in the Policy for Toxicity Assessment and Control Draft Staff Report and Environmental Checklist, the Water Code describes "small community" POTWs as POTWs serving a population of 10,000 or less, or serving a community located in one or more rural counties and also requires that these communities must also have 20 percent of the community's population living below the poverty level or with an unemployment rate of 10 percent or more (Draft Staff Report at Page 60). If the

[8] Acquired through email correspondence with State Water Board staff dated Aug 10, 2012.
[9] Public Policy Institute of California. Lawns and Water Demand in California. *California Economic Policy* Vol 2, No. 2. ed. Ellen Hanak and David Neumark. July 2006. http://www.ppic.org/content/pubs/cep/ep_706ehep.pdf Accessed Aug 17, 2012. Page 3.
[10] *Ibid*. Page 4

State Water Board retains the current definition, it should at a minimum exclude communities with a POTW discharging at a rate equal to or greater than one MGD from this exemption. There is no reason a small community that generates significant volume of discharge should be exempted from requirements that are critical for protecting beneficial uses.

The Draft Policy lacks clarity on how often the RPA will be applied to dischargers.

The Draft Policy does not explicitly state how often dischargers will be required to perform RPA. It may be misconstrued that a discharger who performs RPA once will be exempted from ever having to conduct a RPA again. Such a complete exemption would exclude these dischargers even if they are contributing to toxicity in waterbodies. We do not believe this is the intent, so we request clarification to close this possible loophole. Should the State Water Board decide to retain this requirement, we suggest the Draft Policy include clarifying language that the RPA will be conducted every five years when a permit comes up for renewal, and that data used to perform the RPA will be collected prior to permit issuance.

Acute toxicity limits should be required in areas where dilution credits are applied to chronic toxicity.

The Draft Policy gives Regional Water Boards the discretion to require RPA for acute WET testing. However, there are situations where acute WET objectives would potentially be the more protective toxicity end point for discharge, and should thus be required in all NPDES permits. The Sacramento and San Francisco Bay regions are examples of areas where dilution credits are given for chronic toxicity. In these situations, chronic testing is performed with dilution credits applied to tested concentrations, while acute testing should be required without these credits applied. If a region has such a dilution credit applied to chronic toxicity, it would be possible for acute toxicity testing to show toxicity in situations where chronic toxicity is not demonstrated. The Draft Policy should be revised to require acute toxicity objectives in addition to chronic toxicity objectives in permits where dilution credits are applied. Also, dilution credits should never be applied to acute toxicity because the toxicological effect of morbidity is too severe. Otherwise, mixing zones could be completely devoid of many species of aquatic life.

II. Monitoring Requirements

The Draft Policy should require all stormwater permittees and agricultural dischargers to monitor using the TST Method, and take remedial action if an exceedance is noted. Currently, the Draft Policy requires only stormwater and agricultural dischargers, who are already conducting toxicity testing, to implement the TST Method. This is inappropriate and illegal.

Storm water permittees should be required to conduct toxicity testing, regardless of whether they have existing toxicity monitoring requirements.

Federal law mandates that permits issued to MS4s must require management practices that will result in reducing storm water pollutants to the Maximum Extent Practicable, yet at the same time, requires that non-storm water discharges be effectively prohibited from entering the MS4. Specifically, MS4 permits (1) "shall include a requirement to effectively prohibit non-stormwater

discharges into the storm sewers" and (2) "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or State determines appropriate for the control of such pollutants."[11]

In California, storm water discharges from MS4s and industries have been identified as a probable source of impairment in an estimated 1,326.27 miles of rivers, streams, and creeks.[12] Presently, only a portion of MS4 and individually permitted industrial storm water dischargers are required to conduct toxicity monitoring, with requirements varying among dischargers. Therefore, the Draft Toxicity Policy will require a very limited amount of stormwater permittees to monitor using the TST Method. Not requiring stormwater permittees to conduct toxicity monitoring does not meet the MEP standard, and is illegal.

We urge the State Board to require all individual industrial stormwater dischargers and Phase I and II MS4s that discharge to inland surface waters, enclosed bays, and estuaries be subject to minimum toxicity monitoring requirements. The October 2010 draft more appropriately addresses this issue by requiring four toxicity tests each year of the permit cycle. At a minimum, the State Board should revert to this previous language. In addition, a failing test result should lead to changes in the abatement and mitigation measures currently contained in MS4 and individual industrial storm water permits. As currently drafted, remedial measures are only recommended.

Agricultural Dischargers should be required to conduct toxicity testing, regardless of whether they are currently required to monitor for toxicity.

The State and Regional Water Boards are required under Water Code sections 13269 and 13369, and the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program, section 2, subsection C to issue WDRs, conditional waivers, and conditional prohibitions that require the implementation of various requirements to mitigate significant environmental impacts, degradation of surface water quality, and the potential hazard to the public health or safety.[13] Unfortunately, these permits have done very little to control runoff. Chronic and acute toxicity in California has been directly linked to pesticides in agriculture runoff.[14]

The Draft Toxicity Policy's Staff Report concludes that addressing the effects of "channelized dischargers" from agricultural runoff is necessary if the Policy is to adequately protect aquatic life beneficial uses in California's water bodies.[15] However, the Toxicity Policy only requires agricultural dischargers to conduct toxicity monitoring if they are already have toxicity monitoring requirements. While some agricultural operations and other non-point source

[11] CWA Section 402(p)(3)(B)(ii-iii).
[12] State Water Resource Control Board, Policy for Toxicity Assessment and Control, Draft Staff Report 43 (July, 2012), *available at* http://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/docs/draft_tox_staff_report_0612.pdf
[13] *Id* at 49.
[14] *Id*.
[15] *Id*.

dischargers are currently required to conduct toxicity monitoring, there are presently no statewide toxicity requirements that apply to these dischargers.[16] Again, the Toxicity Policy will require very few agricultural dischargers to comply with the Policy and perform toxicity monitoring. This simply does not meet the legal standards required under Water Code sections 13269 and 13369, and as State Water Board Staff state, will not protect aquatic life beneficial uses.

We request that channelized dischargers presently obligated to carry out toxicity testing would be required to use of the TST Method for all toxicity data analyses within one year of the effective date of the Policy. Channelized dischargers currently not performing chronic toxicity monitoring under their current WDR, conditional prohibition, or conditional waiver cycle would be required to adhere to a chronic toxicity monitoring program developed by the appropriate Regional Water Board in the next permit cycle.

The Draft Toxicity Policy should require a more expedited accelerated monitoring schedule once the MDEL or maximum monthly effluent limitation (MMEL) is exceeded.

If a violation of the MDEL or MMEL is observed, the Draft Policy requires accelerated monitoring, which consists of the collection of six samples over eight weeks. Since toxicity violations are such a major concern, and due to the often abrupt nature of detrimental toxic events, the accelerated monitoring program should truly be *accelerated*. We suggest six samples over a three week period to increase the chances of identifying and abating toxicity sources in a timely and environmentally protective manner. This monitoring should begin no more than one week after a test results in a "fail." Also, to expedite the TRE process that may result from these monitoring efforts, dischargers could collect a sufficient volume of effluent during the accelerated monitoring.

III. Enforcement

The Draft Toxicity Policy should include more stringent enforcement mechanisms.

We are extremely supportive of toxicity being expressed as enforceable numeric maximum daily effluent limitations (MDEL) rather than a trigger for more monitoring. Establishing triggers instead of numeric limits has proven ineffective on the regional level. The Los Angeles Regional Board currently treats an exceedance of toxicity objectives as a trigger for further action rather than an enforceable violation. Heal the Bay's January 2009 report *License to Kill: The Ineffectiveness of Toxicity Testing as a Regulatory Tool in the Los Angeles Region, 2000-2008* (Attachment 2) demonstrates how ineffective this method has been in protecting aquatic life. As mentioned in this report:

> *During the eight and a half year study time period among the 42 dischargers, there were 819 chronic and 68 acute toxicity exceedances in the plant effluent, and there were 64 acute toxicity exceedances among all receiving water testing stations. Despite this frequency of instances of toxicity, the Regional Board recorded only 80 violations in the Los Angeles Region from 2000 to 2008 for these 42 dischargers… only 1.2% (11/887) of*

[16] *Id.*

the instances in which toxicity was present in the effluent did the Regional Board follow up with a substantial enforcement action (License to Kill Report at Page 5).

Since instances of toxicity are erratic and unpredictable in nature, but have the potential to be highly detrimental to aquatic life, it is critical that limits for toxicity are set as clear quantifiable daily maximum limits.

To protect aquatic life, regional water quality control plans ("Basin Plans") include narrative objectives allowing no toxicity. The Los Angeles Basin Plan, for instance, states that: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life." The Clean Water Act also states, "…it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited" (CWA §101(a)(3)). In addition, the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California ("SIP") maintains that "Once the source of toxicity is identified, the discharger shall take all reasonable steps necessary to eliminate toxicity" (SIP Section 4 Page 31). Given these objectives, there should be strict enforcement capabilities for violations of toxicity limits.

We support the Draft Policy's provision that "[a]n exceedance of the MDEL or MMEL during routine monitoring is a violation" (Draft Policy Part III(A)(7) at Page 10). The Draft Policy should clearly state that every exceedance of the MDEL and MMEL must be considered an enforceable violation of the NPDES permit limits. This will ensure the discharger quickly abates the problem.

In contrast, the Draft Policy provides an inappropriate "free pass" by allowing "[a]ny exceedances occurring during a required accelerated monitoring period and, if appropriate, a TRE period shall not constitute additional violations provided that: (1) the discharger proceeds with the accelerated monitoring and TRE (if required) in a timely manner; and (2) the accelerated monitoring and TRE are completed within six months of the initial exceedance" (Draft Policy Part III(7) at Page 10). In other words, exceeding the limit simply "triggers" additional testing and a TRE, during which a discharger can freely discharge at levels toxic to aquatic organisms without risk of enforcement. This lax approach is inconsistent with standing toxicity prohibitions and does not provide an incentive for dischargers to ensure the prohibition of discharged toxic effluent or runoff. We recommend that the State Water Board revise the compliance determination language in the Draft Policy to be consistent, and read: "A test result indicating a "fail" is interpreted as a violation of the objectives established in Part II. Failure to meet these objectives may result in appropriate enforcement action." It would be left to the discretion of the respective Regional Board to enforce the violation.

The maximum daily effluent limitation ("MDEL") should not include a multiplier of the numeric toxicity objectives.

Under the Compliance Determination provisions of the Draft Policy (Part III(A)(6)(B)), "[a] chronic toxicity test result indicating a "fail" with a percent effect at or above 0.50 is an exceedance of the chronic MDEL" (Draft Policy at Page 9). These percent effect values are twice

the regulatory management decision (RMD).[17] Or in other words, this is twice the numeric toxicity objectives in Part II of the Draft Policy. This allows for 40 percent mortality and 50 percent chronic effects before an automatic violation of the MDEL occurs. If the RMD represents the acceptable risk to aquatic life, how does the State Board justify doubling this for the MDEL values? In this decision, the State Board is basically saying that it is okay for a large percentage of aquatic life to be impacted. The MDEL values should be set at a more protective level. It is unclear how staff determined that two-times the RMD should be used. This appears arbitrary and is further weakened since additional averaging takes place in the proposed scheme before a violation occurs. Instead, the MDEL should be set at the toxicity objectives. At a minimum, the State Board should use toxicity observed at 1.5 times the RMD as this is more protective than what is currently proposed in the Draft Policy.

The Draft Toxicity Policy should not allow for compliance schedules.

Another major shortcoming with the Draft Policy is the inclusion of a provision for Regional Water Boards to grant compliance schedules to achieve the objectives in Part II of the Draft Policy at their discretion (Draft Policy at Page 60). We appreciate the Draft Policy excluding dischargers with existing toxicity limits from being eligible for these compliance schedules, but the Draft Policy still proposes to give other permittees two additional years from "the date of permit issuance, reissuance, or reopening to address toxicity for up to ten years after the approval of this Policy" (Draft Policy at Pages 10-11). With this Draft Policy in development since 2003, dischargers have been on notice for nine years. Furthermore, the need for compliance schedules to apply new standards is unnecessary. Permittees have been required to meet similar toxicity standards for years, so meeting these objectives should not present new obstacles. To allow two additional years of toxic impacts to aquatic life is inappropriate and not protective of beneficial uses.

***

In summary, the Draft Policy for toxicity assessment and control is perhaps the most important policy that the State Water Board will vote on this year and is long overdue. The public has waited over nine years for this critical policy and are encouraged to see the Board move forward with its adoption. While we recognize the need and importance for this Draft Policy to be adopted as soon as possible and support the sound statistical TST method proposed in the Draft Policy, the Draft Toxicity Policy as currently written contain inconsistencies and weaknesses that must be addressed for the Policy to be effective.
In order to strengthen this Policy to protect our waterways from toxic impacts, we ask the State Board to please edit the Draft Policy to reflect the points outlined in this letter, summarized below:

- All NPDES permits should be required to contain the numeric toxicity limits;
- Agricultural dischargers should have requirements to control toxic discharge
- Monitoring should be required for agriculture and storm water discharges;

[17] The regulatory management decision (RMD) is the decision that represents the maximum allowable error rates and thresholds for chronic and acute toxicity (and non-toxicity) that would result in an acceptable risk to aquatic life. (Draft Policy at Page 3).

- Any failing toxicity test should be considered a violation and should result in truly accelerated monitoring;
- The MDEL approach should be modified to identify toxic discharges;
- The compliance schedules allowance should be removed;
- RPA should *not* be employed for determining inclusion of toxicity limits in permits.

If you have any questions or would like to discuss any of these comments, please feel free to contact us. Thank you for your consideration of these comments.

Sincerely,

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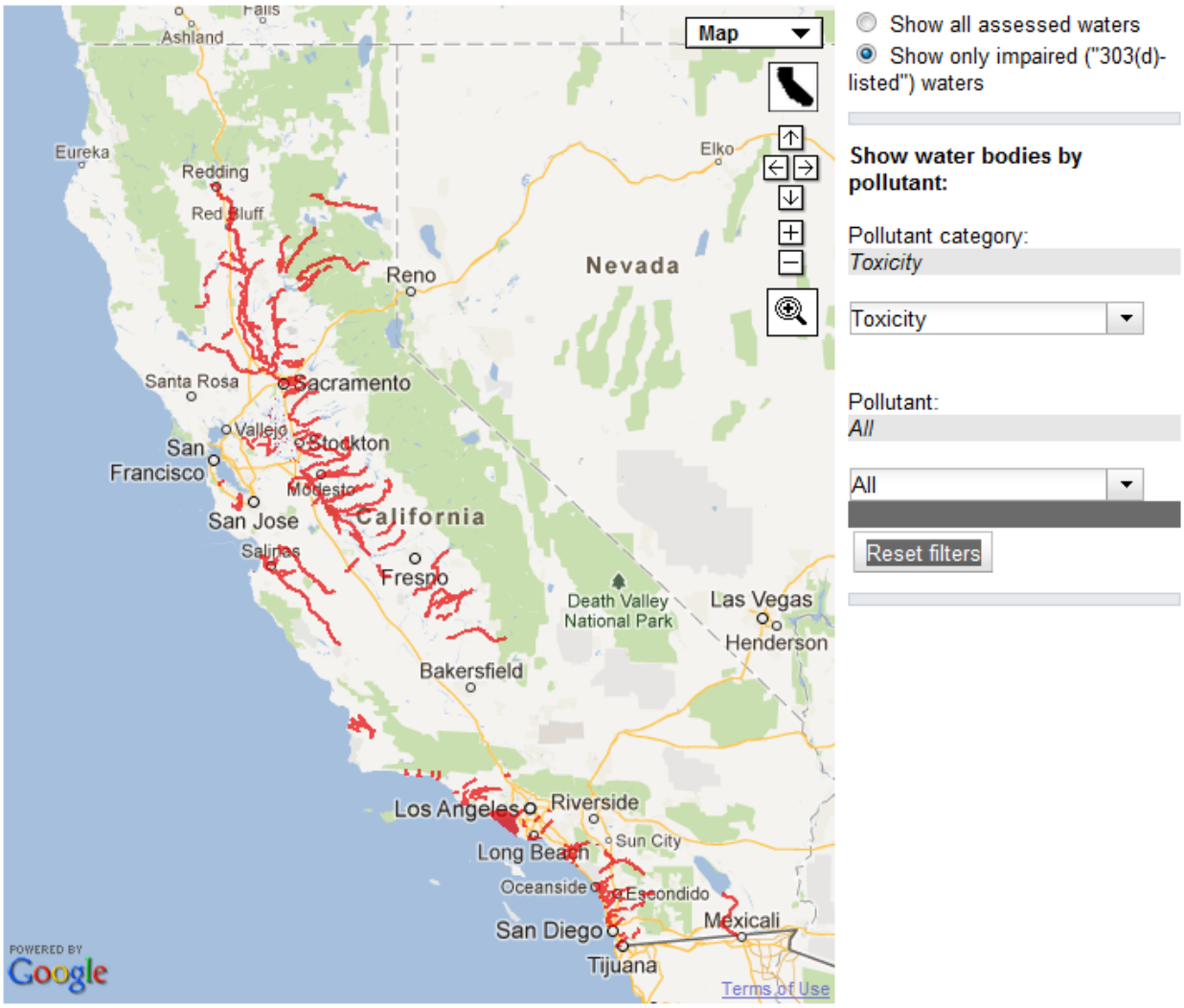
Attachment 1

2010 Integrated Report — Map of Impaired ("303(d) Listed") Waters for Toxicity in California

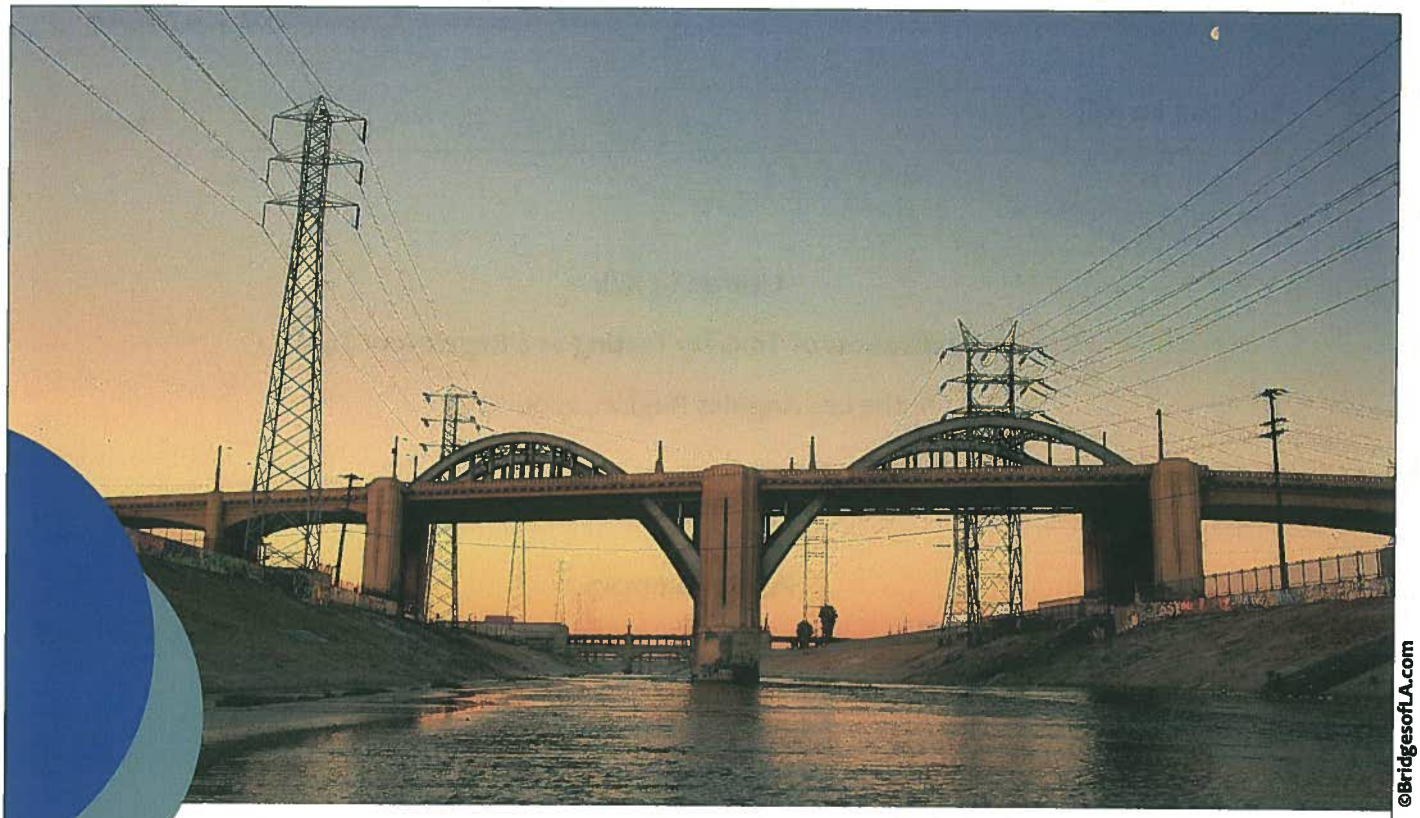


2010 Integrated Report — Map of Impaired ("303(d) Listed") Waters for Toxicity in California

Captured August 17, 2012 9:21AM from
http://waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Attachment 2

License to Kill: The Ineffectiveness of Toxicity Testing as a Regulatory Tool in the Los Angeles Region, 2000-2008



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January 2009

License to Kill

The Ineffectiveness of Toxicity Testing as a Regulatory Tool in the Los Angeles Region, 2000-2008

Heal the Bay

1444 9th Street, Santa Monica, CA 90401

License to Kill:

The Ineffectiveness of Toxicity Testing as a Regulatory Tool in the Los Angeles Region, 2000-2008

Public Summary

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January 2009

First Printing

In 1970, the California Legislature established the Los Angeles Regional Water Quality Control Board (Regional Board) as one of nine local implementing agencies for the State Water Resources Control Board (State Board). The Regional Board's jurisdiction covers nearly 4,000 square miles and services more than 10 million people in Los Angeles and Ventura Counties. Within the Regional Board's jurisdiction, there are approximately 390 surface water body segments.

The Regional Board's Basin Plan is "designed to preserve and enhance water quality and protect the beneficial uses of all regional waters." To achieve these goals, the Regional Board enforces water quality laws, regulations and waste discharge requirements. As part of its Los Angeles Basin Plan, the Regional Board sets specific objectives for toxicity: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life."

Toxic substances that enter water bodies, such as heavy metals or pesticides, pose severe health risks to organisms within the ecosystem, including stunted growth, impaired development, reduced reproduction or even increased mortality. In order to discharge wastewater into water bodies such as tributaries, lakes, drainage ditches, rivers, or the ocean, major dischargers, such as public sewage treatment plants and industrial facilities, must receive permits from the Regional Board. In issuing permits, the Regional Board sets and enforces limitations based on state and national standards on the concentration of pollutants that are allowed to flow into receiving water bodies. Permittees are required to test for these pollutants in their discharge on a regular schedule.

However, in addition to testing for concentrations of individual pollutants, permittees are also required to conduct specific "toxicity tests" which test the actual effects of their discharged water on living test organisms. This toxicity testing—officially known as "whole effluent toxicity (WET) testing"—is the only testing conducted for discharges that attempts to estimate the biological effects of the melting-pot of pollutants being discharged. This testing is extremely important because it is possible that even if the numerical limits are being met for all individual pollutants, the combined effects of all the pollutants or the toxicity of an unmonitored pollutant, such as an emerging contaminant, could still result in chronic (decreased growth, reproduction, development) or acute (death) toxic effects on test organisms. WET testing is truly the "safety net" for ensuring that the wastewater discharged to water bodies is truly safe for aquatic life.

In considering a 2003 petition by the Los Angeles County Sanitation Districts that challenged the overall propriety of numeric limits for chronic toxicity in discharge permits, the State Board declined to make a determination on the issue. While promising at the time to make a final ruling on the matter within 12 months, the State Board has still not addressed the issue five years later. This foot-dragging has created regulatory uncertainty and allowed dischargers to continue releasing toxic effluents. Instead of clear quantitative measures, many dischargers are held to vague "narrative" standards. In many cases, the presence of toxicity in the waste water is merely a trigger for additional sampling and study rather than a cause for an immediate violation and penalty.

The purpose of this study is to evaluate the implications of the State Board's 2003 indecision; to determine the effectiveness of the Regional Board's WET testing in the Los Angeles Region over the past eight and a half years; and to provide recommendations for much needed improvements in the regulatory system. This study includes analyses of permit requirements, toxicity testing data, and enforcement records between the years 2000 and 2008 for 42 major sewage treatment plants and industries with discharge permits from the Los Angeles Regional Water Quality Control Board.

Based on the results of this study, it is clear that the State Board's indecision in 2003 and long delay to address the issue of a numeric limitation for chronic toxicity have created regulatory uncertainty for the Los Angeles Regional Board and, likely, all other regional boards. As a result, the Regional Board has failed to exercise its authority to prevent or deter frequent violations of toxicity regulations in Los Angeles and Ventura counties. Unchecked discharges of toxicity-laden effluents into receiving waters for months and, in some cases, years, have created long-term harmful conditions for aquatic life throughout the region.

Based on an extensive review of Regional Board files, Heal the Bay concludes that the Board has failed to use effluent toxicity testing as an effective regulatory tool. By refusing to hold dischargers to numeric limits for chronic toxicity, the Board has undermined laws that are designed to prevent millions of gallons of polluted discharge from entering our waterways each year.

- **Since the 2003 State Board ruling, 32 major permits in the Los Angeles Region have been renewed or have had amendments to their toxicity limitations. Of these 32 permits, 25 permits (78%) have been**

given either monitoring triggers, narrative limits, or no limits for chronic toxicity, whereas only 7 permits or (22%) received renewed numeric limits.

- Of the 32 renewed or amended permits,14 directly mentioned the State Board decision to defer the decision on chronic toxicity
- During the eight and a half year study time period, among the 42 dischargers, there were 819 chronic and 68 acute toxicity exceedances in the plant effluent, and there were 408 chronic and 64 acute toxicity exceedances among all receiving water testing stations. Despite this frequency of instances of toxicity, the Regional Board recorded only 80 violations in the Los Angeles region from 2000 to 2008 for these 42 dischargers.
- Only 11 of the noted 80 violations (13.8%) had an accompanying enforcement penalty. In other words, only 1.2% (11/887) of the instances in which toxicity was present in the effluent did the Regional Board follow up with a substantial enforcement action. At a 1.2% chance of enforcement, there is minimal incentive for dischargers to keep their effluent non-toxic.

Summary of Recommendations

Evidence reveals that the Regional and State Boards are operating a voluntary compliance program in regards to toxicity, with nearly 99% of violations occurring without significant penalty. Because enforcement is rare and fines even rarer still, there is little incentive for polluters to clean up their act.

Based on the results of this study, Heal the Bay urges enforcement programs be improved in three critical areas:

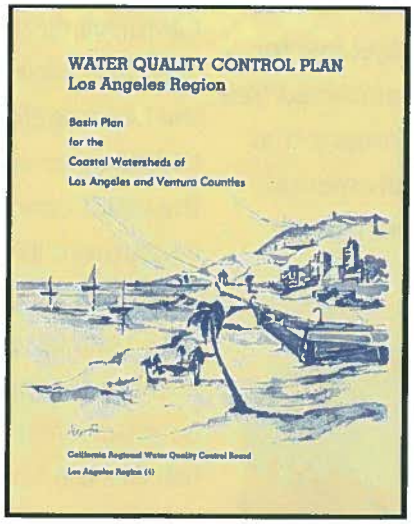
1. Numeric Limits for Chronic Toxicity
2. Timely and Meaningful Enforcement
3. Data Standardization and Organization

Specifically:

- **This issue of chronic toxicity limits should be addressed immediately at the State Board level.**
- **An enforceable numeric toxicity limit—of 1.0 TUc—must be incorporated in permits for all major dischargers, regardless of their toxicity records.**
- **The Regional Board should prioritize enforcement of toxicity violations since toxicity testing is the "safety net" for all other loopholes created in permits.**
- **An exceedance should constitute a violation, not just trigger further action.**
- **If a given test finds toxicity to aquatic life, discharger failure to implement accelerated follow-up monitoring and source identification/ reduction should constitute a violation. The Regional Board should prioritize any failure for enforcement action.**
- **A state-managed online data management system to track information and manage permits should be made available to dischargers, who would be required to submit data online in a timely manner via a standardized system. Enhanced clarity and transparency of the actual toxicity data will improve enforcement timing and frequency by the Regional Board.**

The Los Angeles Regional Water Quality Board

In 1970, the California Legislature established the Los Angeles Regional Water Quality Control Board (Regional Board) as one of nine local implementing agencies for the State Water Resources Control Board (State Board). The Regional Board's jurisdiction covers nearly 4000 square miles and services more than 10 million people in Los Angeles and Ventura Counties. Within the Regional Board's jurisdiction, there are approximately 390 surface water body segments. The Regional Board's mission includes both addressing regional water quality concerns through updates of the Water Quality Control Plan (Basin Plan)[1] for the Los Angeles Region and enforcing federal and state water quality laws, regulations, and waste discharge requirements.



The United States Clean Water Act (CWA)[2] and California's premier water law, the Porter Cologne Act, both prohibit discharges to surface waters except in compliance with approved National Pollution Discharge Elimination System (NPDES) permits. The Regional Board implements the NPDES program for the Los Angeles Region. Publically owned (sewage) treatment works (POTWs) and industrial facilities like power plants and refineries—which are the focus of this study—must receive an NPDES permit in order to discharge waste into water bodies such as tributaries, lakes, drainage ditches, rivers, or the ocean. The NPDES permits include both narrative and numerical water quality objectives to protect the beneficial uses of the region's waters such as municipal water supply, recreation, navigation, and the preservation and enhancement of fish, wildlife, and other aquatic resources. The Los Angeles Basin Plan and two other regulatory documents, the California Ocean Plan[3] (which regulates waste discharge into the ocean) and the California Toxics Rule[4] (which is federally promulgated and regulates priority toxic

[1] Water Quality Control Plan, Los Angeles Region. 1994. California Regional Water Quality Control Board, Los Angeles Region (4) <http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/bp1_introduction.pdf>

[2] 33 U.S.C. § 1251 *et seq.*

[3] California Ocean Plan. 2005. State Water Resource Control Board. <http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oplans/oceanplan2005.pdf>

[4] California Toxics Rule. May 18, 2000. 40 Code of Federal Regulations Part 131. <http://www.epa.gov/region09/water/ctr/index.html>

pollutants), set limitations (or water quality objectives) for the amount or concentration of pollutants which are allowed in the effluent—or discharged liquid waste—and receiving water bodies. These limitations are incorporated into NPDES permits and their enforcement is the responsibility of the Regional Board. The Los Angeles Basin Plan includes a water quality objective for toxicity: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life."

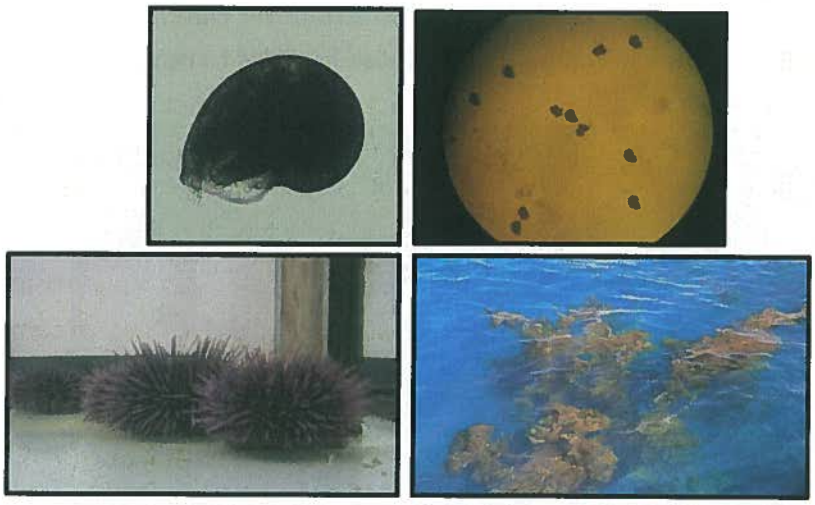
"All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life."

-Basin Plan, Los Angeles Regional Water Quality Control Board

What is Toxicity Testing?

Acute and chronic whole effluent toxicity (WET) testing has been an official important component of the Clean Water Act's NPDES discharge monitoring since 1994.[5] However, acute toxicity testing has been a permit requirement for some southern California dischargers since 1970,[6] and chronic toxicity monitoring was required in the Los Angeles region as early as 1990.[7] Unlike other water quality tests which assess the exact concentration of a certain constituent like nitrogen, ammonia, or copper through a laboratory instrument, WET tests assess the biological effects of the effluent on approved aquatic test organisms. Common fresh water test organisms include fish like the fathead minnow (*Pimephales promeles*), invertebrates like the water flea (*Ceriodaphnia dubia*), and aquatic plants like the green alga (*Selenestrum capricornutum*).

[5] 60 Fed. Reg. 53,529 (Oct. 16, 1995).
EPA Regions 9 & 10. May 31, 1996. Guidance for Implementing Whole Effluent Toxicity Testing Programs. Page 1-1.
[6] California Regional Water Quality Control Board, Los Angeles Region Resolution 70-52, page 18.
[7] Water Quality Control Board Order No. 89-95, NPDES No. CA0054011, Monitoring and Reporting Program No 5059.



Example toxicity test organisms. From left to right: (top) juvenile Abalone, developing juvenile abalone under the microscope, (bottom) purple sea urchin, giant kelp. Photos courtesy of City of Los Angeles.

There are two categories of WET tests:

1. **Acute toxicity tests**
2. **Chronic toxicity test**

Acute toxicity tests use mortality as an endpoint; chronic toxicity tests have non lethal endpoints such as reduced growth, impaired development, or reduced reproduction. Acute toxicity tests usually determine the effluent concentration lethal to 50% of the test organisms, or the LC50. For example, a relatively polluted water sample might be lethal to 50% of the test organisms even when diluted substantially, whereas a relatively clean water sample would not be lethal to any of the test organisms at its normal concentration. Generally in toxicity tests, organisms are exposed to the effluent water for 96 hour periods. Acute toxicity can be expressed in data reports in Acute Toxicity Units (or TUa)[8], but more often it is recorded as the percent survival of test organisms in 100% pure effluent, or in other words, the percentage of the organisms which do not die when put into the effluent from a particular facility. If there is no mortality in 100% pure effluent, then the TUa is simply recorded as zero. A TUa of 1.0 would mean that 50% of the test organisms died in the pure undiluted effluent. In general, NPDES permits issued in

[8] A TUa is equivalent to "100 divided by the LC50."

the Los Angeles region allow for a minimum of 70% survival per test and a minimum average of 90% survival over three consecutive tests, as recommended by the EPA.

Chronic toxicity testing can be more difficult to analyze as the toxicity effects are not as visibly obvious as mortality. Chronic toxicity tests are generally measured by comparing the biological endpoint, such as decreased growth, in a control sample of clean laboratory water to a minimum of five dilutions such as 100%, 75%, 50%, 25% and 12.5% effluent. This suite of tests is designed to provide a dose-response curve for the biological endpoint that is being measured in that particular test. Similar to acute toxicity, chronic toxicity is measured by chronic toxicity units, or TUc. [9] However, chronic toxicity units are calculated a little differently, and 1.0 TUc means 100% of the water sample gives no observable effect of toxicity for the biological endpoint; a TUc value over 1.0 means that the water being tested had to be diluted in order to reach a concentration at which no toxic effects were observable. In other words, a TUc value over 1.0 indicates that the water sample is toxic to aquatic life. Detailed EPA guidance and rules for laboratory protocol for acute and chronic toxicity testing provide regulatory testing consistency. [10]

> "The primary objective of whole effluent toxicity testing is to identify, characterize, and eliminate toxic effects of discharges on our aquatic resources."
>
> -EPA Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs

Why is toxicity testing so important?

Toxicity testing directly answers the question: is this water toxic to living organisms? Whole effluent toxicity testing is unique because it is the only testing done on NPDES discharges that takes into account the real-time aggregate effect of all the pollutants together in the effluent, instead of relying on after-the-fact mathematical modeling. The

> A TUc value over 1.0 indicates that the water sample is toxic to aquatic life.

[9] A TUc is defined as "100 divided by the No Observed Effect Concentration." The No Observed Effect Concentration ("NOEC") is the highest concentration of effluent or water being tested that causes no observable effect in terms of the biological endpoint being tested (growth, reproduction, etc.) for the test organisms.

[10] U.S. EPA. 2002. EPA Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. EPA-821-R-02-012

U.S. EPA. 2002. EPA Methods for Measuring Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. Third Edition. EPA-821-R-02-014.

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Toxicity testing directly answers the question:

Is this water toxic to living organisms?

regular testing on the effluent determines the levels of individual chemicals and pollutants and allows assessment of whether the levels are below safe thresholds, or waste discharge requirements, which are prescribed in regulatory permits. It is possible that even if effluent limits are being met for all individual constituents, the synergistic effects of monitored constituents or the toxicity of an unmonitored constituent, such as an emerging contaminant, could still result in toxic effects on test organisms. In other words, chronic toxicity testing is the "safety net" of the NPDES monitoring program. In addition, although acute toxicity testing is very important, chronic toxicity testing brings to light the importance of the significant harm caused by toxicity at levels lower than lethal concentrations.

Chronic toxicity testing is the "safety net" of the NPDES monitoring program.

A Hole in the Safety Net:

The State Water Resources Control Board 2003 Decision

In July 2002, the Regional Board renewed the NPDES permits for the Los Coyotes Water Reclamation Plant [11] and the Long Beach Water Reclamation Plant.[12] Included with the renewed permits were time schedule orders (TSOs) for total inorganic nitrogen, total ammonia and chronic toxicity. The discharger's monitoring reports prior to July 2002 had shown that there had been significant chronic toxicity in the effluent, and the cause of the toxicity was ammonia. The TSOs expired in October 1, 2003 when both facilities were scheduled to have completed their eight year work plans for modifications to their treatment systems to reduce nitrite, nitrate, nitrogen and hence the toxic ammonia in the effluent. The interim daily maximum chronic toxicity limit of 5.0 TUc in the TSOs was based on effluent performance records between 1997 and 2001. The dischargers would have to comply with the final chronic toxicity permit limits of a daily maximum limit of 1.6 TUc and a monthly median limit of 1.0 TUc by October 1, 2003.

The County Sanitation District of Los Angeles, which owns and operates both the Los Coyotes and Long Beach Water Reclamation Plants, filed a petition to the State Board for review of the permits on several accounts, including the claim that "effluent limitations for chronic toxicity are improper." [13] The State Board decided to review the petitions, permits, and TSOs on July 16, 2003. On September 16, 2003, the State Board officially declined to make a decision on the propriety of chronic toxicity effluent limitations.

> *... we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the [State Implementation Plan] to specifically address the issue. We anticipate that review will occur within* ***the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitation for chronic toxicity contained in these permits. (emphasis added)***[14]

In the same order, the State Board decided that until a decision had been made regarding numeric limitations for chronic toxicity, the permits in question could have narrative (not numeric) effluent limitations,

[11] NPDES No. CA0054011
[12] NPDES No. CA0054119
[13] Order WQO 2003-0012. September 16, 2003. State Water Resources Control Board. SWRCB/OCC Files A-1496 and 1496(a), p.8.
[14] Ibid, p. 9. Emphasis added.

with a *trigger* for accelerated monitoring and requirements for toxicity investigation evaluations (TIEs) and toxicity reduction evaluations (TRE). The minimum requirements for accelerated monitoring, TIEs and TREs are specified by the EPA and can be found in the monitoring and reporting section of current NPDES permits in the Los Angeles region (Appendix C). Despite the fact that Heal the Bay has reminded the State Water Board numerous times of their obligation, there has been no action to date taken by the State Board on the matter of effluent limitations for chronic toxicity.

Despite the fact that Heal the Bay has reminded the State Water Board numerous times of their obligation, there has been no action to date by the State Board on the matter of effluent limitations for chronic toxicity.

Purpose of this Study

The purpose of this study is to determine if WET testing is being used effectively as a regulatory tool to protect aquatic life in the Los Angeles region, especially given the shift in NPDES permit requirements since 2003 from a numeric limit to a trigger in response to the State Board's indecision.

THE STUDY

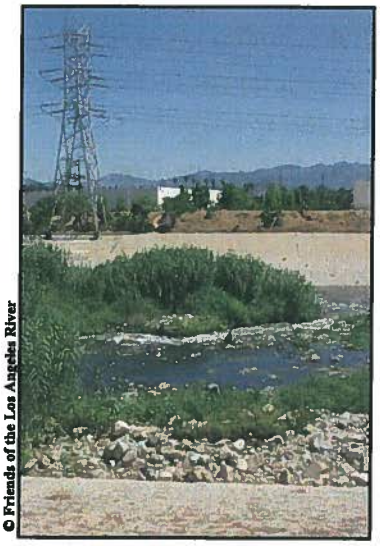
This study included an analysis of the 42 major POTW and Industrial NPDES dischargers regulated by the Los Angeles Regional Water Quality Control Board (Appendix B). Heal the Bay analyzed the discharger-collected acute and chronic toxicity testing data, the permit requirements for toxicity testing for each discharger, and the enforcement records for all 42 dischargers from 2000 to the middle of 2008.

Heal the Bay staff gathered the following information for all 42 dischargers from 2000-2008:

- Permit requirements for toxicity testing
- All available acute and chronic toxicity data through August 2008
- Qualitative information (quality and organization) regarding the data found at the Regional Board offices
- Number of chronic toxicity tests resulting in a TUc over 1.0 (or over the dilution factor for ocean dischargers)[15]
- Any follow-up for exceedances as based on the permit requirements (accelerated monitoring, TIE/TRE)
- Toxicity-related violations and official enforcement actions taken by Regional Board through August 2008

This analysis was based solely on the information available in the Regional Board's files and missing data that was requested of the Regional Board and forwarded to Heal the Bay for the time period between 2000 and 2008. Toxicity data were obtained for all 42 dischargers, unless there were years in which the discharger did not conduct toxicity testing due to lack of requirements under its permit or due to the lack of discharge from less frequent, periodic discharges. Two dischargers—Rio Hondo Power Plant and West Basin Water Recycling Plant—did not require toxicity testing during most of the time period selected for analysis; although there were no toxicity data to analyze, they still were included in the analysis of permit requirements.

[15] Initial dilution is defined as "the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge." The Ocean Plan allows ocean dischargers to apply an initial dilution factor before meeting water quality objectives. Instead of sampling the water at the edge of the mixing zone, compliance is determined mathematically by multiplying a numerical dilution factor unique to each discharger to the effluent concentration at the end of the pipe to ensure it does not exceed the water quality objective which must be met at the edge of the mixing zone.



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In a few cases, there was information found in the physical files at the Regional Board offices regarding TIEs and TREs initiated or completed by the dischargers, and that information was included in the analysis. To be more confident that all TIE/TRE information was included in the analysis, Heal the Bay staff requested all information on TIEs and TREs performed between January 1, 2000 and December 31, 2008. Only a few files were subsequently forwarded to Heal the Bay staff and were included in this analysis. We suspect that this was because so few TIEs and TREs were completed and reported to the Regional Board during the eight year study period.

MAJOR FINDINGS

Permits: A Shift Away from Limits

The NPDES permits for the 42 major NPDES dischargers in Los Angeles and Ventura Counties were primarily analyzed for the presence or absence of chronic toxicity limits and the type of regulatory tool (numeric limit, trigger, narrative limit, or none of the above) in the permit. Table 1 depicts the diversity of regulatory tools for chronic toxicity found in the permits included in this study. The language for acute limits did not vary among the dischargers that had acute limits.

Table 1

Type of Regulatory Tool (as referred to in this study)	Permit Language for Chronic Toxicity
Numeric Limit	Limit of 1.0 TUc
Modified Numeric Limit	For 3 consecutive months exceeds 1.0 TUc
Ambiguous Numeric Limit	Consistently exceeds 1.0 TUc
Trigger	Monthly median trigger of 1.0 TUc
Narrative Limit	There shall be no chronic toxicity in the effluent discharge.
No Limit	[no mention of chronic toxicity in the permit]

In 2000, of the 42 discharge permits analyzed, there were: 20 numeric limits; 17 narrative limits or no limits; zero triggers, and five unknown (permits not found). Currently in active permits, there are: 15 numeric limits; 12 narrative limits or no limits; and 15 triggers. See Figure 1 for an overview of the changes of chronic toxicity limitations in permits from 2000 to 2008.

Since the State Water Resources Board ruling on September 16, 2003 to postpone making a determination of the propriety of final numeric effluent limitations for chronic toxicity, 32 NPDES permits of the 42 dischargers in this study have been renewed or had amendments to their toxicity limitations. Of these 32 permits, 25 permits or 78% have been given either enhanced monitoring triggers, narrative limits, or no limits for chronic toxicity (Figure 2). The remaining seven of the 32 permits all maintained their numeric limitations from their previous permit cycle, and six of the seven were ocean dischargers. It is clear that toxicity limits for inland dischargers have disappeared since the 2003 State Board indecision, while toxicity limits for ocean dischargers have remained relatively unchanged (Figure 1). However, they are starting to change as well.

Los Angeles River

FIGURE 1:

Overview of Changes in the Regulatory Tools Used for Chronic Toxicity between 2000 and 2008 for Inland Dischargers and Ocean Dischargers

Toxicity Regulatory Tool	
L	Numeric Limit
T	Trigger
Na	Narrative Limit
N	Nothing
*	Mentions State Board 2003 Decision as reason for permit switch

Inland Dischargers	2000	2001	2002	2003	2004	2005	2006	2007	2008
Burbank WWRP	L	L	L	L	L	L	T	T	T
Camarillo WWRP	L	L	L	L	Na*	Na	Na	Na	T
Camrosa WWRP	L	L	L	L	L	L	L	L	L
Carson BP Refinery "Watson Refinery"	N	T	T	T	T	T	T	N	N
Dominguez Hills Tank Farm	N	N	N	N	N	N	N	N	N
Fillmore WWTP	L	L	L	T*	T	T	N	N	N
Foothill Feeder Power Plant	N	N	N	N	N	T	T	T	N
Glendale WRP	L	L	L	L	L	L	L	L	Na*
Hill Canyon WWRP	L	L	L	L	Na	Na	Na	Na	T*
Long Beach WWRP	N	N	L	L	T*	T	T	T	T
Los Coyotes WWRP	N	N	L	L	T*	T	T	T	T
Ojai Valley WWTP	L	L	L	L	Na*	Na	Na	Na	Na
Pomona WWRP	N	N	N	N	T*	T	T	T	T
San Jose Creek WWRP	N	N	N	N	T*	T	T	T	T
Santa Paula WWTP	N	N	N	N	N	N	N	N	N
Santa Susana, Boeing Field Lab	Unknown	T	T	T	T	T			
Saugus WWRP	N	N	N	T*	T	T	T	T	T
Simi Valley WWRP	N	N	N	L	Na*	Na	Na	Na	Na
Tapia WRF, Las Virengas, Malibu Creek	N	N	N	N	N	T*	T	T	T
Tillman WRP	N	N	N	N	N	N	T	T	T
Torrance ExMob Refinery	Unknown	N	N						
Valencia WWRP	N	N	N	T*	T	T	T	T	T
Ventura WWRP	L	T	T	T	T	T	T	T	T
West Basin WWRP	N	N	N	N	N	N	N	N	N
William E. Wame Power Plant	N	N	N	N	N	N	N	N	N
Whittier Narrows WWRP	N	N	N	L	L	L	L	L	L

HOW MANY VIOLATIONS ; 85

Ocean Dischargers	2000	2001	2002	2003	2004	2005	2006	2007	2008
Alamitos Generating Station	L	L	L	L	L	L	L	L	L
Avalon WWTP	L	L	L	L	L	L	L	L	L
Carson JWPCP	L	T	T	T	T	T	L	L	L
El Segundo Gen. Station	L	L	L	L	L	L	L	L	L
El Segundo Chevron Refinery	L	L	L	L	L	L	L	L	L
Harbor Gen. Station	L	L	L	T	T	T	T	T	T
Haynes Gen. Station	L	L	L	L	L	L	L	L	L
Hyperion WWTP	L	L	L	L	L	L	L	L	L
Long Beach Gen. Station	L	L	L	L	L	L	L	L	L
Mandalay Gen. Station	L	L	L	L	L	L	L	L	L
Ormond Beach Gen. Station	L	L	L	L	L	L	L	L	L
Oxnard WWTP	L	L	N	N	N	N	N	N	L
Redondo Beach, AES	L	L	L	L	L	L	L	L	L
Rio Hondo Power Plant	N	N	N	N	N	N	N	N	N
Scattergood Gen. Station	L	L	L	L	L	L	L	L	L
Terminal Island WWTP	L	L	L	L	L	T*	T	T	T

Just prior to the State Board's postponement of action in September 2003, the regulatory uncertainty at the Regional Board level surrounding chronic toxicity limitations was apparent in the permit language of renewed permits, such as the Simi Valley Water Quality Control Plant's NPDES permit adopted in June 2003.

> *"The Discharger's effluent demonstrated chronic toxicity during the last permit cycle. Based on this information, the Regional Board has determined that there* ***is a reasonable potential that the discharge will cause toxicity in the receiving water*** *and, consistent with [State Implementation Plan] section 4, the Order contains a numeric effluent limitation for chronic toxicity. The circumstances warranting a numeric chronic toxicity effluent limitation are presently under review by the State Water Resources Control Board (State Board) in SWRCB/ OCC Files A-1496 & A-1496(a) [Los Coyotes/Long Beach Petitions]. The State*

Board's decision is expected in July 2003. ***In the event the State Board removes the numeric chronic toxicity effluent limitation from the Los Coyotes/Long Beach permits or replaces the limit with a narrative chronic toxicity effluent limitation, this Order contains a reopener to allow the Regional Board to modify this permit, if necessary,*** *consistent with the State Board order on the Los Coyotes/Long Beach Petitions."*[16] (emphasis added)

Similarly, following the State Board decision, dischargers—such as Fillmore Wastewater Treatment Plant—which had reasonable potential to cause toxicity in their receiving waters were given narrative toxicity limitations instead of enforceable numeric limitations in October 2003.

"A review of the Discharger's effluent data demonstrated chronic toxicity (greater than USEPA's 1 TUc) during the last permit cycle. Based on this information, the Regional Board has determined that there ***is a reasonable potential that the discharge will cause toxicity*** *in the receiving water and, consistent with SIP section 4, the Order contains a* ***narrative effluent limitation*** *for Chronic Toxicity. The* ***circumstances warranting a numeric chronic toxicity effluent limitation when there is reasonable potential were reviewed by the State Water Resources Control Board*** *(State Board) in SWRCB/OCC Files A-1496(a) [Los Coyotes/Long Beach Petitions]. On September 17, 2003, the State Board decided to defer the numeric chronic toxicity effluent limitations until the adoption of Phase II of the SIP, and* ***replaced the numeric chronic toxicity effluent limitation with a narrative effluent limitation for the time being.***" (emphasis added)[17]

Since the State Board's deferral to make a decision in 2003 on the propriety of numeric limitations for chronic toxicity, 14 of the 32 renewed or amended permits, or 44% directly mentioned the State Board's decision to defer the matter on chronic toxicity. In other words, it is very clear that the 2003 indecision of the State Board and subsequent delay to address this toxicity issue for five years has caused a domino effect of weakening toxicity regulations in the Los Angeles region.

[16] Simi Valley Water Quality Control Plant (NPDES No. CA0055221); Permit R4-2003-0081 at page 18, June 5, 2003.
[17] Fillmore Wastewater Treatment Plant (CA0059021); Permit R4-2003-0136 at page 17, revised October 2, 2003.

Toxicity in Los Angeles

In order to quantify the chronic toxicity present in the effluent of the 42 dischargers, we counted the number of chronic toxicity tests which exceeded a TUc value of 1.0 or exceeded the permit limit (if there was an official numeric limit and it was different than 1.0, as was the case for many ocean dischargers because of their dilution factors). Using official limits to count instances of chronic toxicity for all dischargers was not possible because, as discussed earlier, many of the permits lacked chronic toxicity limits for all or part of the study period. However, any value over 1.0 TUc indicates that the effluent had to be diluted in order for the test organisms to experience no toxic effects, therefore a TUc threshold of 1.0 was used to quantify toxicity exceedances. Even the EPA recommends the use of a 1.0 TUc limit: "EPA's

It is very clear that the 2003 indecision of the State Board and subsequent delay to address this toxicity issue for 5 years has caused a domino effect of weakening toxicity regulations in the Los Angeles region.

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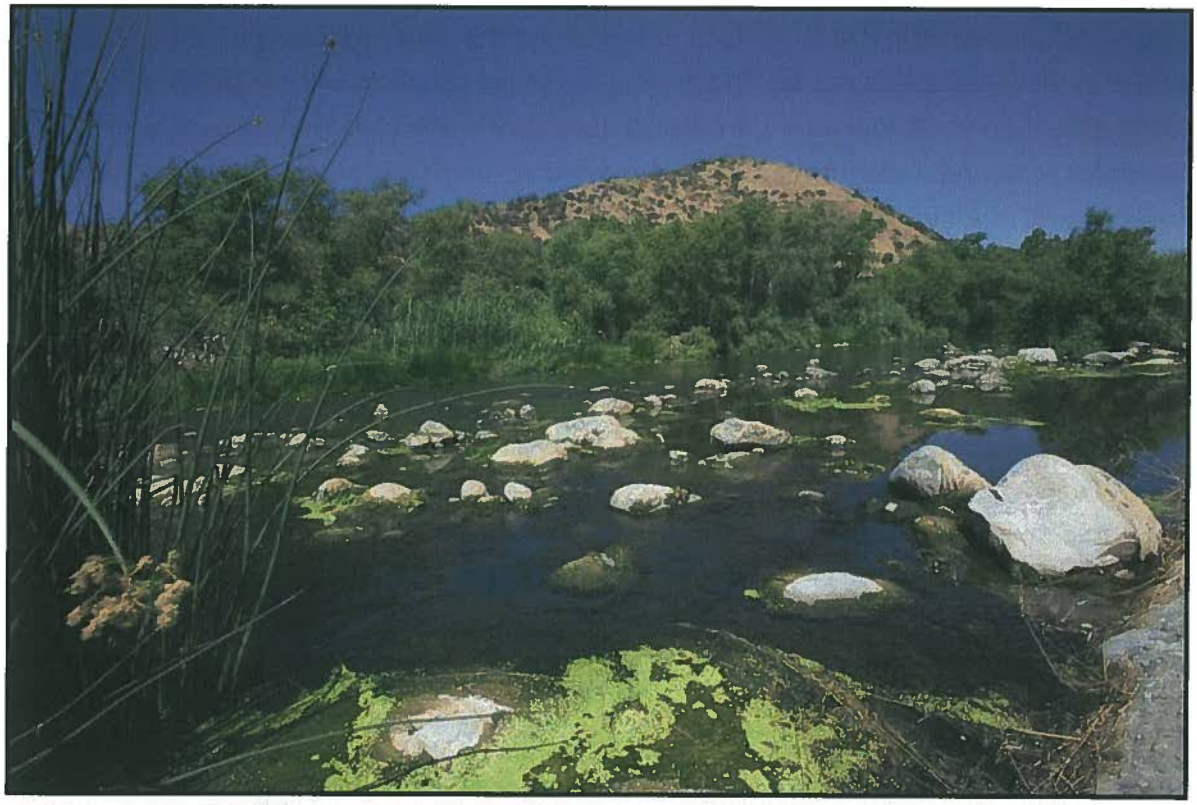
El Segundo Chevron Refinery



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recommended criteria for whole effluent toxicity are as follows: to protect aquatic life against chronic effects, the ambient toxicity should not exceed 1.0 chronic toxic unit (TUc)..."[18]

In order to quantify acute toxicity, any test resulting in less than 70% survival of the test organisms or 3 consecutive months resulting in an average of less than 90% survival were counted since these are the official limits for acute toxicity for all of the permits in the study. During the eight and a half year study time period, there were 819 chronic toxicity exceedances, and there were 68 acute toxicity exceedances.

The receiving water monitoring data was evaluated in the same way, resulting in 408 additional chronic toxicity exceedances and 64 acute toxicity exceedances. It is important to note that *all* receiving water stations for which toxicity testing data was available were included in this analysis, not simply the stations directly downstream from the dischargers. Through permit requirements, individual dischargers are typically held accountable for toxicity exceedances which are higher at the station directly downstream from their outfalls when compared to the station directly upstream from their outfalls. However, all the receiving water stations were

[18] USEPA. 1991. Technical Support Document for Water Quality-Based Toxics Control, p. xi.

intentionally included in this analysis to demonstrate the general toxicity in the receiving waters in the Los Angeles region. This finding has major ramifications for the Ventura and Los Angeles County Stormwater permits because clearly there are toxicity problems in numerous receiving waters impacted by dry weather runoff and stormwater. The receiving water as well as effluent exceedances are broken out by discharger in Appendices D and E.

As mentioned earlier, counting violations of chronic toxicity limitations was not possible because of the great number of permits which lacked numeric limits and used other more ambiguous limitations as apparent in Table 1. In conversations with Regional Board staff, it was confirmed that the phrases "consistently exceeds" and "three consecutive months of exceedances" were functionally like having no limit, because this phrasing is unenforceable. [19] For instance, a permit limit of "three consecutive months of exceedances" allows a discharger theoretically to have two months of exceedances with no violation, and "consistently exceeds" can be interpreted in any number of ways.

From March 2000 to January 2003, every single acute toxicity test on Burbank's effluent or the receiving water directly downstream of the plant resulted in 0% survival of the test organisms.

Burbank Water Reclamation Plant:

The Burbank Water Reclamation Plant,[20] which discharges into the upper Los Angeles River, had a narrative limit for chronic toxicity for receiving water and no limit for effluent chronic toxicity from June 29, 1998 until November 9, 2006 when the old permit was renewed[21] and amended[22] to contain a monthly median trigger of 1.0 TUc for chronic toxicity for effluent and receiving water. Therefore, even though there were 37 months recorded with an effluent chronic toxicity over 1.0 TUc from 2000 to 2005—ranging from 1.79 to greater than 10 TUc—none of these values were counted as violations based on the lack of a numeric chronic toxicity limitation in the permit.

Burbank POTW did have standard acute toxicity limitations for effluent and receiving water in its old permit and there were 15 quarters of acute toxicity exceedances for effluent and

[19] Conversation with Regional Board Staff, Regional Water Quality Control Board, Monday, April 21st, 2008.

nine quarters of acute toxicity exceedance at the receiving water station directly downstream of the plant outfall. From March 2000 to January 2003, every single acute toxicity test on Burbank's effluent or the receiving water directly downstream of the plant resulted in 0% survival of the test organisms *Pimephales promelas*, commonly known as the fathead minnow. None of these 124 acute or chronic instances of toxicity between 2000 and 2008 at Burbank's plant resulted in official Regional Board toxicity violation enforcement action or in any apparent follow-up by the discharger such as accelerated monitoring or a TIE/TRE, at least according to the available Regional Board file records. Finally, in January 2008, a TIE began at the Burbank plant and results are still pending.

Tillman Water Reclamation Plant:

The Tillman Water Reclamation Plant, [23] which also discharges into the Los Angeles River, also recorded high and consistent toxicity. During the eight year study period, the Tillman plant had 90 chronic toxicity exceedances of its effluent. In fact, 15 monthly samples resulted in toxicity greater than 10 TUc, and 12 of those 15 months were greater than 16 TUc. A TUc of 16 means that the effluent had to be diluted to 6.25% of its normal concentration in order not to induce toxic life-stage effects on the test organisms. In 2006, all 12 months of effluent testing revealed the presence of chronic toxicity. In 2007, six months of tests showed the presence of chronic toxicity. Notably, the Tillman plant did not have an effluent chronic toxicity limit until December 2006, at which time the permit was amended to include a monthly median trigger of 1.0 TUc for both effluent and receiving water. The Regional Board's enforcement database recorded 6 chronic toxicity violations in 2007, but none of the violations resulted in fines or any other enforcement action.

None of these 124 acute or chronic instances of toxicity between 2000 and 2008 at Burbank's plant resulted in official Regional Board toxicity violation enforcement action or in any apparent follow-up.

[20] NPDES No. CA0055531
[21] Permit Number: 98-052
[22] Permit Number: R4-2002-0094
[23] NPDES No. CA0056227

Toxicity in LA's Rivers and Streams

According to the data available, only 19 of the 42 dischargers were conducting toxicity testing in the receiving water during the study time period. According to the receiving water testing records at all testing stations above and below the points of discharge, there were 472 chronic and acute toxicity exceedances in receiving water, including the Los Angeles River, the San Gabriel River, San Jose Creek (a tributary of the San Gabriel River), the Calleguas Creek, Arroyo Conejo (a tributary of the Calleguas Creek), the Ventura River, and the Santa Clara River. According to the Clean Water Act's 303(d) list of impaired water bodies in the Los Angeles region, only reaches of Calleguas Creek, San Jose Creek, and the Santa Clara River are listed for toxicity.[24] The rest of these water bodies with toxicity were not listed as impaired by toxicity.

The Glendale Wastewater Reclamation Plant [25] recorded 64 quarterly samples with chronic toxicity values over 1.0 TUc and 45 quarterly samples with acute toxicity values below 70% survival in the LA River at its three receiving water testing stations over the eight-year study period. Of these 64 chronic toxicity exceedances, 22 quarterly tests among the three receiving water stations resulted in a TUc of 10 or greater. A TUc of 10 means that the effluent had to be diluted by a factor of 10 in order to eliminate any toxic effects to test organisms.

Because one receiving water station that frequently recorded high toxicity is upstream of the Glendale plant, the presence of this toxicity in the Los Angeles River in this region cannot be attributed solely to the Glendale Plant, despite the consistent and high toxicity present in the plant's effluent throughout the study period. The discharger is responsible for investigating the toxicity when the station immediately downstream has higher

[24] 2002 and 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs. Los Angeles Water Quality Control Board.
[25] NPDES Permit No. CA0053953

toxicity than the station upstream. In most cases for Glendale, the upstream station recorded the same level of toxicity as the two downstream stations. Although the Glendale plant may not be responsible for the toxicity in the upper Los Angeles River upstream of its discharge, the consistent and significant toxicity detected in its effluent over the past eight years has inevitably contributed to the chronic toxic conditions in the Los Angeles River. Additionally, there has been no action under the LA County Stormwater permit to eliminate toxicity in that stream reach.

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Lack of Enforcement

Between 2000 and 2008, of the more than 1300 exceedances of chronic and acute toxicity values, the Regional Board only recorded a total of 80 violations for acute and chronic toxicity for major NPDES dischargers in the Los Angeles region. According to conversations with the Regional Board, there were no enforcement violations for failure to begin or complete a TIE/TRE during the study time period.[26] These 80 toxicity violations were from 18 dischargers, and only 11 of the 80 violations or 13.8% had an accompanying enforcement penalty (Administrative Civil Liability or Settlement/Court Order). Notably, these 11 violations covered only 2 dischargers.[27] There was no enforcement of receiving water toxicity violations during the entire eight year study period.

Only 11 of the 80 violations recorded between 2000 and 2008 had an accompanying enforcement penalty.

[26] Email exchange between Regional Board Staff and Heal the Bay, April 21, 2008.
[27] Camarillo Water Reclamation Plant (NPDES No. CA0053597); Santa Paula Water Reclamation Facility (NPDES No. CA0054224)

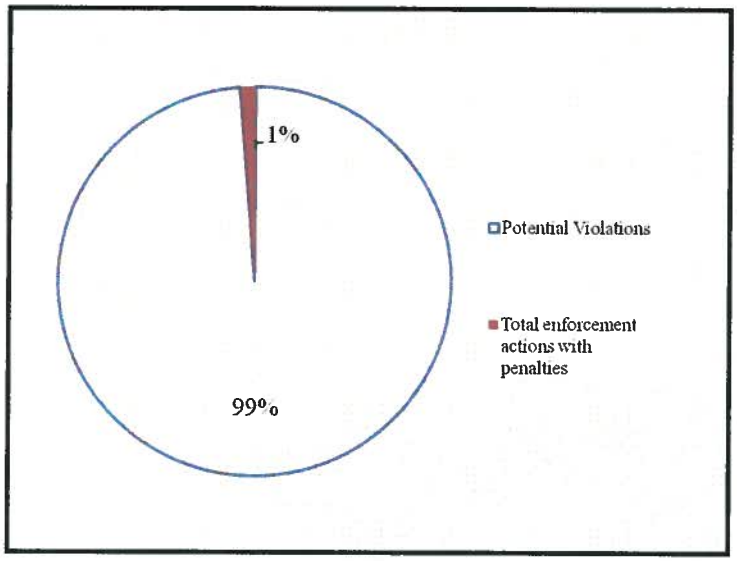
This low rate of enforcement can only add to the lack of incentive to find and eliminate toxicity. Of the 887 chronic and acute effluent exceedances from 2000 to 2008, there were only 11 enforcement actions with penalties. In other words, 1.2% (11/887) of the instances in which toxicity was present in the effluent were followed by an enforcement action. The lack of enforceable chronic toxicity limitations likely plays a large role in this huge discrepancy in the presence of toxicity and enforcement. However, there were still numerous instances in the toxicity data when a permit violation was apparent, and there was no corresponding enforcement action.

Terminal Island Treatment Plant

The City of Los Angeles Terminal Island Treatment Plant [28] discharges wastewater into the Los Angeles Outer harbor in San Pedro Bay. Although there were exceedances of the chronic toxicity limit every year from 2000 to 2008, some years such as 2002, 2005, 2006 and 2007 had 10-12 months of chronic toxicity. Unlike the Glendale and Tillman plants, though, the Regional Board noted in their enforcement database that the Terminal Island plant had 12 toxicity violations. However, there has not been any enforcement action taken by the Regional Board for these violations. Notably and not surprisingly, the numeric toxicity limitation was replaced in 2005 with a narrative limit and a monthly median trigger as a result of the 2003 State Board decision.

[28] NPDES Permit No. CA0053856

FIGURE 2: The Los Angeles Regional Water Quality Board Enforcement Record for Effluent Toxicity Testing (2000-2008)



The Lack of Adequate Follow-up

It is clear that the State Board decision in 2003 to defer the judgment on the propriety of numeric chronic toxicity limitations and the subsequent inaction by the State Board have led to the absence of numeric toxicity limitations in renewed permits, since 78% of the renewed permits have shifted to narrative limits, monthly median triggers, or no limits at all. The movement to monthly median triggers has resulted in a regulatory system full of loopholes which allows toxicity to be present in effluent and receiving waters with no enforceability. The trigger system relies heavily on follow-up: accelerated monitoring, and eventually TIE/TREs. Ideally, if a toxicity limit is exceeded, accelerated monitoring would be triggered. If toxicity persists during the accelerated monitoring, a TRE work-plan would be initiated and could include a TIE. A TIE is "a set of procedures to identify the specific chemicals responsible for effluent toxicity," and a TRE "is a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.[29]

Discharger follow-up on exceedances was scattered and inconsistent over the eight-year study time period. There were instances when the data and reports reflected a

[29] USEPA. 1991. Technical Support Document for Water Quality-Based Toxics Control, p. xxi.

completed TIE, but very few completed TREs. Information for only 16 TIE/TREs was available at the Regional Board for the eight year study time period. Of those 16, 4 resulted in actually identifying the source of toxicity; these sources included ammonia, metals, zinc, and alum. See Appendices D and E for a summary of discharger follow-up and TIE/TRE results. In one case, an email from the consultant to the discharger (which was included in the data file) stated that the receiving water exhibited *more* toxicity than the undiluted effluent (which still was toxic), so the "processes within the plant are actually improving the quality of the receiving water." There was no record available of a TRE for this discharger. This type of argument—that the toxicity in the receiving water directly downstream of the plant outfall is less than the toxicity in the water upstream of the plant outfall—is found multiple times in toxicity reports as the justification to allow a discharger to end the follow-up investigation of toxicity and return to normal monitoring. None of these results were used for clean up actions for permitees or co-permittees under county wide stormwater permits.

There were still more cases in which the follow-up began in accordance with the permit requirements, and then the toxicity reportedly "disappeared." Clearly not all toxicity events will be permanent or even long-lasting, and therefore, the process of accelerated monitoring and initiating a TIE/TRE can turn into a

Santa Paula Water Reclamation Facility

The Santa Paula Water Reclamation Facility,[30] which discharges into the Santa Clara River, has never had an effluent limit or trigger for chronic toxicity. The facility showed consistent chronic and acute toxicity during the eight and a half year study period. Most recently between 2006 and the first half of 2008, 20 chronic toxicity tests were performed on the facility's effluent and 17 or 87.5% of the tests revealed the presence of toxicity. The effluent failed the annual acute toxicity tests in both 2006 and 2007; the 2008 test has not yet been completed to our knowledge. These exceedances have never had any follow-up or enforcement action. Regional Board staff confirmed this:

> *"The Santa Paula Permit does not include an effluent limit or trigger for chronic toxicity. It does have an acute toxicity limit and the effluent consistently fails to meet the acute toxicity limit. However, no TIE/TRE has been conducted and no [Notice of Violation] has ever been issued for violations of acute toxicity limitation."* [31]

[30] NPDES Permit No. CA0054224
[31] Email correspondence from Regional Board staff, June 19, 2008

type of "ghost hunt" because the source of toxicity is gone. Although it may be logically reasonable for a discharger to cease an investigation once the toxicity is determined to be gone, it is not reasonable and is in violation of the permit that a discharger should ignore the toxicity exceedances and follow-up requirements, even if they are ephemeral. As the Regional Board did not enforce the lack of follow-up action even once during the study time period,[32] there is essentially no incentive for the discharger to perform these additional tests.

Not surprisingly, dischargers recognize and arguably take advantage of the flexibility of the system. In eight years, there were only 11 violations acted upon by the Regional Board for toxicity which resulted in a penalty. In a cover letter from a consulting laboratory to a discharger regarding the failure of the majority of their accelerated monitoring tests, the consultant wrote:

> *"I don't know **how the RWQCB [Regional Board] will approach these test failures.** Since the plant will be down during the month of December, they may have you continue the toxicity testing after the plant resumes normal operation. This would seem to be the **logical approach,** since the causative toxic agent **could have been eliminated** during the non-operational period. If the permit were to be **strictly adhered to,** an Initial Toxicity Reduction Evaluation would need to be implemented."*

Several issues are highlighted in this memo. Primarily, there is clearly uncertainty in how the Regional Board will approach test failures, supporting the points made above that Regional Board enforcement is unpredictable. Secondly, it lays out a dichotomy between taking the "logical approach" and "strictly adhering to the permit." Finally, it highlights the fact that toxicity can be ephemeral. The ultimate result is a system in which there is very little incentive to find and eliminate toxicity.

The ultimate result is a system in which there is very little incentive to find and eliminate toxicity.

[32] Email exchange between Regional Board Staff and Heal the Bay, April 21, 2008.

Is Nitrogen Simply to Blame?

Much of the toxicity in the effluent of Los Angeles region dischargers continues to be blamed on excess ammonia, nitrate and nitrite. Ammonia, nitrate and nitrite were and can be major sources of toxicity, particularly for facilities which have not installed nitrification/de-nitrification (NDN) facilities to reduce excess nitrogen. However, what is apparent in this study is that plants that have completed their NDN facilities are still seeing toxicity in their effluent, so this reasoning may no longer hold water.

Recently, the City of Los Angeles, which runs the Glendale plant, sent a letter to the Regional Board alerting the Board to a chronic toxicity exceedance of 4 TUc on May 28, 2008. The letter stated, "Chronic toxicity at LAG frequently exceeds the permit limit. Because of this, a TIE investigation is being conducted."[33] The letter goes on to say that ammonia is not the cause of the toxicity, as the plant has already installed NDN facilities, and the ammonia levels, including levels in the May exceedance sample, are at non-toxic levels. Similarly, a letter from the City of Los Angeles to the Regional Board on September 4, 2008 indicated that ammonia was not the cause of the persistent toxicity present at the Tillman Water Reclamation Plant since NDN facilities were already installed and ammonia levels in tests were below toxic levels; rather the "results indicate metals as the source of the chronic toxicity in the [Tillman] effluent sample." [34]

Furthermore, other plants—such as the Valencia, Saugus, Pomona, and Burbank plants—continued to experience toxicity years after they have completed their NDN facilities. Even those without NDN facilities, have found toxicity causes other than ammonia. For example, Ventura Water Reclamation Plant had an incidence of toxicity in 2005, leading to a TIE which determined that zinc was the cause of the toxicity exceedances. A summary of this information is included in Appendices D and E. Clearly, installing NDN facilities at all discharge plants was a long overdue and needed priority, but the assumption should not be made that NDN facilities will solve all toxicity problems or that toxicity monitoring is any less important post construction.

[33] Letter from the City of Los Angeles to the California Regional Water Quality Control Board regarding the Glendale Water Reclamation Plant June 5, 2008.
[34] Letter from the City of Los Angeles to the California Regional Water Quality Control Board regarding the Donald C. Tillman Water Reclamation Plant. September 4, 2008.

Importance of Toxicity Testing

Effluent limitations are scientifically derived to implement water quality objectives that protect the designated beneficial uses of the region's waters. However, the limitations are derived for individual constituents, and the limitations only exist for constituents that are listed on the priority pollutant list or in a state water plan. These limitations do not account for the biological effects of exposure to the mixtures of dozens of chemicals, nor do they account for the effects of many emerging contaminants that are not typically monitored or are monitored very infrequently. It is estimated that almost 100,000 chemicals are used commercially. Approximately 2,300 new chemicals are submitted to the U. S. Environmental Protection Agency Office of Pollution Prevention and Toxics each year, and only about 5% of those have eco-toxicity data. [35]

WET testing is the only test conducted for NPDES discharges which attempts to estimate the biological effects of the melting pot of effluent constituents, and it is the only test which would detect toxic effects of chemicals which are not monitored, like emerging contaminants.

Even the U.S. EPA has confirmed the unique and critical nature of WET testing.

> *"While the numerical restrictions comprise the backbone of the permitting system, EPA has found that, standing alone, these limits are not sufficient. Effluents may contain many different pollutants. Even if no single pollutant were present in a harmful amount, the mix of different pollutants still might have negative effects upon aquatic organisms."* [36]

WET testing is truly the "safety net" for all other effluent limitations, particularly as dischargers have been allowed to move away from numeric effluent limits and simply use unenforceable performance goals based on a "reasonable potential" analysis.

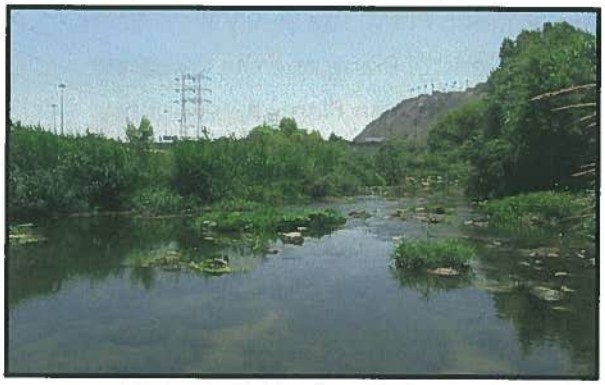
The importance of WET testing is not lost on the Los Angeles Regional Board. In the most recent renewal of the NPDES permit for the Oxnard Wastewater Treatment Plant,[37] the regional Board reestablished an enforceable numeric chronic toxicity limit for the City of Oxnard Wastewater Treatment Plant, not because of persistent toxicity, but simply "because the chronic toxicity tests will detect any constituent, or

[35] Zeeman, M.; Auer, C. M.; Clements, R. G.; Nabholz, J. V.; Boethling, R. S.. "U.S. EPA Regulatory Perspectives on the Use of QSAR for New and Existing Chemical Evaluations" SAR and QSAR in Environmental Research 3.3 (1995). 26 Sep. 2008 <http://www.informaworld.com/10.1080/10629369508234003>
[36] United States Court of Appeals, District of Columbia Circuit. Decided December 10, 2004. Edison Electric Institute, et al., v. Environmental Protection Agency, et al. No. 96-1062. p. 2.
[37] NPDES No. CA0054097

combination of constituents, that may be present and adversely affect marine biota, not detected by routine laboratory testing." [38] The Regional Board still has the authority to make such a judgment for ocean dischargers because the State Board decision only directly applied to inland dischargers. The Regional Board confirmed that WET testing does serve a last line of defense to "loopholes" created elsewhere in NPDES permits.

Regional Board staff believe that the monthly chronic toxic effluent monitoring program will screen unexpected toxicants appearing in the effluent and make up a "loophole" not covered by the reduced monitoring frequency... [39]

Although WET testing is critical for assessing the aggregate and real-time effects of discharged effluent on aquatic organisms, WET testing is a very simplified version of the type of toxicity testing which could be done to assess fully the levels of effluent constituents protective of native aquatic life. Regulatory WET testing is conducted with laboratory grown species in a highly controlled laboratory environment. These laboratory tests do not take into account the additional stressors which are present for organisms in the natural environment, such as the consistent stress of being exposed to pollutants on a daily basis, especially during the sensitive phases



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of early development. The species used in toxicity testing are not likely to mimic the response of the most sensitive native organisms in the receiving waters. The point is that the current WET testing, if anything, is likely underestimating the effects of effluent and receiving water toxicity to native organisms; therefore, it is alarming that the regulatory requirements and framework surrounding even this *minimum* level of toxicity testing appear to be backsliding and failing to provide the necessary protection for aquatic life.

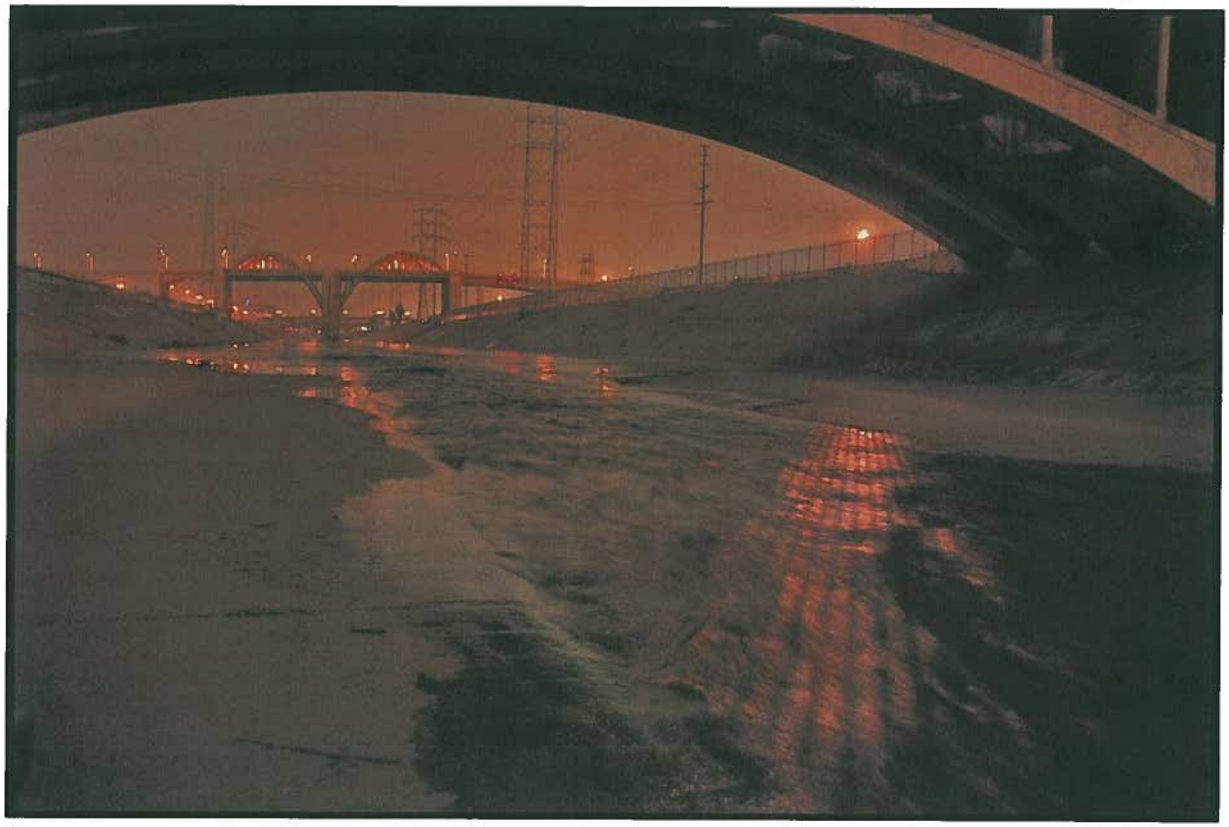
[38] Response to Comments, City of Oxnard, Oxnard Wastewater Treatment Plant (CA0054097), Tentative NPDES Permit dated. April 16, 2008. Los Angeles Regional Water Quality Control Board. P. 9.

[39] Response to Comments, City of Oxnard, Oxnard Wastewater Treatment Plant (CA0054097), Tentative NPDES Permit dated. April 16, 2008. Los Angeles Regional Water Quality Control Board. P. 9.

The EPA Weighs in on California's Situation

In August 2008, Region 9 of the EPA decided to get involved in a Los Angeles NPDES permit issue because toxicity was not adequately being addressed. The EPA sent a letter to the Los Angeles Regional Board in response to three draft NPDES permit renewals (Hill Canyon Water Reclamation Plant, the Simi Valley Water Quality Control Plant, and the Camarillo Water Reclamation Plant) in LA County which were drafted without numeric limits and simply with chronic toxicity triggers of 1 TUc. All three plants are subject to the waste load allocation of 1.0 TUc which was established by the Regional Board in the 2005 toxicity TMDL for Calleguas Creek, the receiving water for all three plants. In other words, the Regional Board itself had determined many years ago that there was a toxicity problem in Calleguas Creek, and yet, in-keeping with the pattern since the State Board indecision, the Regional Board went against their own 2005 toxicity limit recommendations and allowed for toxicity triggers in the draft permits. In this recent intervening letter, the EPA states that it "does not believe that a whole effluent toxicity trigger alone is fully effective because it does not by itself, restrict the quantity, rate, or concentrations of pollutants in an effluent." [40] The letter goes on to say that "without WET limits, permitting authorities cannot assure that water quality standards for chronic toxicity will be attained."[41] Clearly, we are well beyond the need for assurances because based on the results of this study, water quality standards for chronic toxicity are not being attained or enforced to the detriment of the region's aquatic life.

[40]Letter to Los Angeles Regional Water Quality Control Board. August 25, 2008. United States Environmental Protection Agency, Region IX, p. 2.



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RECOMMENDATIONS

This study has brought to light multiple ways in which the current system of toxicity testing is not functioning as a regulatory tool and is leading to the inadequate and inconsistent protection of aquatic life. In order to repair this broken system, the following changes must be implemented as soon as possible:

1. Numeric Limits for Chronic Toxicity

From a top down perspective, the State Board's indecision in 2003 and long delay to address the issue of a numeric limitation for chronic toxicity have created regulatory uncertainty for the Los Angeles Regional Board and, likely, all other regional boards. As we have seen even in cases where "reasonable potential" for toxicity has been found, the Regional Board has felt compelled to include only a narrative limit with a trigger. The presumption under the Clean Water Act is that numeric effluent limits will be the tools used to limit the discharge of pollutants, particularly toxic ones. An enforceable numeric toxicity limit is the most protective regulatory strategy for aquatic life and should be included in NPDES permits for all dischargers, regardless of their toxicity records or

"reasonable potential." After all, a reasonable potential analysis could never be done on the thousands of pollutants that are never monitored in the effluent; hence, the need for the safety net of WET testing.

- ***This issue of chronic toxicity limits should be addressed immediately at the State Board level.***
- ***An enforceable numeric toxicity limit—of 1.0 TUc—must be included in permits for all major dischargers, regardless of their toxicity records.***

2. Timely and Actual Enforcement

Although the use of accelerated monitoring, TIEs, and TREs may be appropriate to track-down some toxic agents, the nature of toxicity is often ephemeral, and the current system allows for ephemeral toxicity to occur with no repercussion. Based on enforcement records provided to us by the Regional Board, it is clear that the vast majority of toxicity violations are not being recorded. Of those which are recorded, only 14% receive penalties. The Regional Board is obligated to enforce permit violations in situations where discharge is creating conditions that are harmful to aquatic life.

- ***The Regional Board should prioritize enforcement of toxicity violations since toxicity testing is the "safety net" for all other loopholes created in NPDES permits.***
- ***An exceedance should constitute a violation, not just trigger further action.***
- ***Failure to implement accelerated monitoring, TIEs and TREs should constitute a violation and should be prioritized for enforcement action.***

3. Data Standardization and Organization

One of the major issues discovered in this study was the disorganized and highly variable quality of the toxicity data for the 42 dischargers. Almost all data reports for the 42 dischargers were formatted differently, and there were vast discrepancies in the amount of information included in the reports. In order for toxicity evaluation to be prioritized statewide and at the regional level, an improved system of data gathering and standardization will be necessary. The California Integrated Water Quality System (CIWQS)—an online computer data management system recently developed by the State and Water Quality Control Boards to track information and manage permits and violations—could be an efficient way to standardize all toxicity data. CIWQS allows for the online submittal of information by individual NPDES permittees under the statewide

general sanitary sewer overflow (SSO) order and industrial stormwater permit. The public is able to access this data through online reports.

- ***CIWQS or a similar system should be made available to NPDES POTW and Industrial dischargers and they should be required to submit data online in a timely manner via a standardized system. This would improve the clarity and transparency of the actual toxicity data and improve the enforcement timing and frequency at the Regional Board.***

CONCLUSION

Only 126 priority pollutants are regulated under the California Toxics Rule, yet thousands of toxic chemicals are used every day. Toxicity testing is the safety net of the Clean Water Act, but only if the toxicity results are used to target polluted effluent and the clean-up of toxic surface waters. Most of the region's aquatic ecosystems have degraded biological integrity. One of the most important actions to protect aquatic life is to ensure that receiving waters are not toxic. As explained by the EPA, an enforceable numeric toxicity limit is the most protective strategy for aquatic life, and there should be enforcement actions taken against those dischargers that create conditions which are harmful to aquatic life. Currently, whole effluent toxicity testing is not being used effectively as a regulatory tool to protect aquatic life in the Los Angeles Region, especially given the erosion of permit requirements from numeric limits to triggers in response to the State Board's indecision in 2003. Because the State Board ruling in 2003 was statewide, similar results as found in this study in Los Angeles and Ventura Counties are expected statewide. It is time to repair the safety net and ensure that California's waters and all dependent living organisms are adequately protected.

APPENDIX A: ACRONYM LIST

Basin Plan	Water Quality Control Plan for Los Angeles Basin
CIWQS	California Integrated Water Quality System
CTR	California Toxics Rule
CWA	United States Clean Water Act
DDT	Dichlorodiphenyltrichloroethane
EPA	United States Environmental Protection Agency
LC50	Lethal Concentration for 50% of the test organisms
NDN	Nitrification/Denitrification
NOEC	No Observed Effect Concentration
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
Ocean Plan	California Ocean Plan
PCB	Polychlorinated biphenyls
POTW	Publically Owned Treatment Works
Regional Board	Los Angeles Regional Water Quality Control Board
State Board	California State Water Resources Control Board
TIE	Toxicity Identification Evaluation
TRE	Toxicity Reduction Evaluation
TSO	Time Schedule Orders
TUa	Acute Toxicity Unit
TUc	Chronic Toxicity Unit
WET	Whole Effluent Toxicity

APPENDIX B: NPDES DISCHARGERS INCLUDED IN THE STUDY

NPDES Discharger	Discharger Number
Alamitos Generating Station, AES	CA0001139
Avalon Wastewater Treatment Facility	CA0054372
Burbank Water Reclamation Plant	CA0055531
Camarillo Water Reclamation Plant	CA0053597
Camrosa Water Reclamation Facility	CA0059501
Carson Joint Water Pollution Control Plant	CA0053813
Carson Refinery, BP	CA0000680
Dominguez Hills Tank Farm	CA0052949
El Segundo Generating Station	CA0001147
El Segundo Refinery, Chevron	CA0000337
Fillmore Wastewater Treatment Plant	CA0059021
Foothill Feeder Power Plant	CA0059641
Glendale Water Reclamation Plant	CA0053953
Harbor Generating Station	CA0000361
Haynes Generating Station	CA0000353
Hill Canyon Wastewater Treatment Plant	CA0056294
Hyperion Treatment Plant	CA0109991
Long Beach Generating Station	CA0001171
Long Beach Water Reclamation Plant	CA0054119
Los Coyotes Water Reclamation Plant	CA0054011
Mandalay Generating Station	CA0001180
Ojai Valley Wastewater Treatment Plant	CA0053961
Ormond Beach Generating Station	CA0001198
Oxnard Wastewater Treatment Plant	CA0054097
Pomona Water Reclamation Plant	CA0053619
Redondo Generating Station, AES	CA0001201
Rio Hondo Power Plant	CA0059633
San Jose Creek Water Reclamation Plant	CA0053911
Santa Paula Water Reclamation Facility	CA0054224
Santa SusanaField Laboratory, Boeing	CA0001309
Saugus Water Reclamation Plant	CA0054313
Scattergood Generating Station	CA0000370
Simi Valley Water Quality Control Plant	CA0055221
Tapia Water Reclamation Facility, Las Virengas, Malibu Creek	CA0056014
Terminal Island Treatment Plant	CA0053856
Tillman Water Reclamation Plant	CA0056227
Torrance Refinery, ExxonMobile Corporation	CA0055387
Valencia Water Reclamation Plant	CA0054216
Ventura Water Reclamation Facility	CA0053651
West Basin Water Recycling Plant	CA0063401
William E. Warne Water Reclamation Plant	CA0059188
Whittier Narrows WWRP	CA0053716

APPENDIX C: TYPICAL WHOLE EFFLUENT TOXICITY TESTING PERMIT REQUIREMENTS

A. Acute Toxicity Testing

1. **Methods and test species.** Test Species and Methods for Discharge Serial Nos. 001 and 002. The Discharger shall conduct 96-hour static renewal acute toxicity tests on flow-weighted 24-hour composite effluent samples. When conducting toxicity tests in accordance with a specified chronic test methods manual, if daily observations of mortality make it possible to also calculate acute toxicity for the desired exposure period and the dilution series for the toxicity test includes the acute IWC, such method may be used to estimate the 96-hour LC50. The presence of acute toxicity shall be estimated as specified in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA 821-R-02- 012, 2002), with preference for west coast vertebrate and invertebrate species.

2. **Frequency**

a. Screening - The Discharger shall conduct the first acute toxicity test screening for three consecutive months in 2006. Re-screening is required every 24 months. The Discharger shall rescreen with a marine vertebrate species and a marine invertebrate species and continue to monitor with the most sensitive species. If the first suite of re-screening tests demonstrate that the same species is the most sensitive, then the re-screening does not need to include more than one suite of tests. If a different species is the most sensitive or if there is ambiguity, then the Discharger shall proceed with suites of screening tests for a minimum of three, but not to exceed five, suites.

b. Regular toxicity tests - After the screening period, monitoring shall be conducted monthly using the most sensitive marine species.

3. **Toxicity Units.** The acute toxicity of the effluent shall be expressed and reported in Acute Toxic Units, TUa,

where, $TUa = \frac{100}{LC50}$

The Lethal Concentration, 50 Percent (LC50) is expressed as the estimate of the percent effluent concentration that causes death in 50% of the test population, in the time period prescribed by the toxicity test.

B. Chronic Toxicity Testing

1. **Methods and test species.** The Discharger shall conduct critical life stage chronic toxicity tests on 24- hour composite effluent samples in accordance with USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, 1995, (EPA/600/R-95/136). Pursuant to the 2005 California Ocean Plan, upon the approval of the Executive Officer of the Regional Water Board, the Discharger may use a second tier organism (e.g., silverside) if first tier organisms (e.g., topsmelt) are not available. However, the Discharger is required to immediately resume the chronic toxicity test using the original testing organism as soon as this organism becomes available. When a chronic toxicity test method that incorporates a 96-hour acute toxicity endpoint is used to monitor toxicity at the chronic IWC in effluent discharged from Discharge Serial No. 003 or 004, the 96-hour acute toxicity statistical endpoint shall also be reported as LC50 and TUa, along with other chronic toxicity test results required by this permit.

2. **Frequency**

a. Screening - The Discharger shall conduct the first chronic toxicity test screening for three consecutive months in 2006. Re-screening is required every 24 months. The Discharger shall rescreen with a marine vertebrate species, a marine invertebrate species, and a marine alga species and continue to monitor with the most sensitive species. If the first suite of re-screening tests demonstrate that the same species is the most sensitive, then the re-screening does not need to include more than one suite of tests. If a different species is the most sensitive or if there is ambiguity, then the Discharger shall proceed with suites of screening tests for a minimum of three, but not to exceed five, suites.

b. Regular toxicity tests - After the screening period, monitoring shall be conducted monthly using the most sensitive species.

3. **Toxicity Units.** The chronic toxicity of the effluent shall be expressed and reported in Chronic Toxic Units, TUc, where,

$$TUc = \frac{100}{NOEC}$$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent concentration that causes no observable effect on test organisms, as determined by the results of a critical life stage toxicity test.

C. Quality Assurance

1. Concurrent testing with a reference toxicant shall be conducted. Reference toxicant tests shall be conducted using the same test conditions as the effluent toxicity tests (e.g., same test duration, etc).

2. If either the reference toxicant test or effluent test does not meet all test acceptability criteria (TAC) as specified in the test methods manual (EPA-821-R-02-012 and/or EPA/600/R-95/136), then the Discharger must re-sample and re-test within 14 days.

3. Control and dilution water should be receiving water or laboratory water, as appropriate, as described in the manual. If the dilution water used is different from the culture water, a second control using culture water shall be used.

4. A series of at least five dilutions and a control shall be tested. The dilution series shall include the instream waste concentration (IWC), and two dilutions above and two below the IWC. The acute IWC for Discharge Serial Nos. 001 and 002 is 19% effluent. The chronic IWC for Discharge Serial Nos. 001 and 002 is 0.60% effluent; the chronic IWC for Discharge Serial No. 003 is 0.66% effluent; the chronic IWC for Discharge Serial No. 004 is 0.86% effluent

5. Because this permit requires sublethal hypothesis testing endpoints from the 1995 West Coast marine and estuarine WET test methods manual and the 2002 East Coast marine and estuarine WET test methods manual, with-in test variability must be reviewed and variability criteria [e.g., Minimum Significance Difference (MSD) bound, Percent. Minimum Significance Difference (PMSD) bounds] must be applied, as specified in the test methods manuals. The calculated MSD (or PMSDs) for both reference toxicant test and effluent toxicity test results must meet the MDS bound (or PMSD bounds) variability criteria specified in the test methods manuals.

D. Accelerated Monitoring

If the effluent toxicity test result exceeds the limitation, then the Discharger shall immediately implement accelerated toxicity testing that consists of six additional tests, approximately every two weeks, over a 12- week period. Effluent sampling for the first test of the six additional tests shall commence within 5 working days of receipt of the test results exceeding the toxicity limitation.

1. If all the results of the six additional tests are in compliance with the toxicity limitation, the Discharger may resume regular monthly testing.

2. If the result of any of the six additional tests exceeds the limitation, then the Discharger shall continue to monitor once every two weeks until six consecutive biweekly tests are in compliance. At that time, the Discharger may resume regular monthly testing.

3. If the results of any two of the six tests (any two tests in a 12-week period) exceed the limitation, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) and implement the initial investigation Toxicity Reduction Evaluation (TRE) Workplan.

4. If implementation of the initial investigation TRE workplan (see item E below) indicates the source of toxicity (e.g., a temporary plant upset, etc.), then the Discharger shall return to the regular testing frequency.

E. Preparation of an Initial Investigation TRE Workplan

The Discharger shall prepare and submit a copy of the Discharger's initial investigation Toxicity Reduction Evaluation (TRE) workplan to the Executive Officer of the Regional Water Board for approval within 90 days of the effective date of this permit. If the Executive Officer does not disapprove the workplan within 60 days, the workplan shall become effective. The Discharger shall use USEPA manual EPA/833B-99/002 (municipal) as guidance, or most current version. At a minimum, the TRE Workplan must contain the provisions in Attachment G. This workplan shall describe the steps the Discharger intends to follow if toxicity is detected, and should include, at a minimum:

1. A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.

2. A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in the operation of the facility; and,

3. If a toxicity identification evaluation (TIE) is necessary, an indication of the person who would conduct the TIEs (i.e., an in -house expert or an outside contractor). See MRP Section V.F.3 for guidance manuals.

F. Steps in Toxicity Reduction Evaluation (TRE) and Toxicity Identification Evaluation (TIE)

1. If results of the implementation of the facility's initial investigation TRE workplan indicate the need to continue the TRE/ TIE, the Discharger shall expeditiously develop a more detailed TRE workplan for submittal to the Executive Officer within 15 days of completion of the initial investigation TRE. The detailed workplan shall include, but not be limited to:
   a. Further actions to investigate and identify the cause of toxicity;

   b. Actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

   c. A schedule for these actions.

2. The following section summarizes the stepwise approach used in conducting the TRE:
   a. Step 1 includes basic data collection.

   b. Step 2 evaluates optimization of the treatment system operation, facility housekeeping, and selection and use of in-plant process chemicals.

   c. If Steps 1 and 2 are unsuccessful, Step 3 implements a Toxicity Identification Evaluation (TIE) and employment of all reasonable efforts using currently available TIE methodologies. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity.

   d. Assuming successful identification or characterization of the toxicant(s), Step 4 evaluates final effluent treatment options.

   e. Step 5 evaluates in-plant treatment options.

   f. Step 6 consists of confirmation once a toxicity control method has been implemented. Many recommended TRE elements parallel source control, pollution prevention, and storm water control program best management practices (BMPs). To prevent duplication of efforts, evidence of compliance with those requirements may be sufficient to comply with TRE requirements. By requiring the first steps of a TRE to be accelerated testing and review of the facility's TRE workplan, a TRE may be ended in its early stages. All reasonable steps shall be taken to reduce toxicity to the required level. The TRE may be ended at any stage if monitoring indicates there are no longer toxicity violations.

3. The Discharger may initiate a TIE as part of the TRE process to identify the cause(s) of toxicity. The Discharger shall use the USEPA acute manual, chronic manual, EPA/600/R-96-054 (Phase I), EPA/600/R-92/080 (Phase II), and EPA-600/R-92/081 (Phase III), as guidance.

4. If a TRE/TIE is initiated prior to completion of the accelerated testing required in Section V.D. of this program, then the accelerated testing schedule may be terminated, or used as necessary in performing the TRE/TIE, as determined by the Executive Officer.

5. The Regional Water Board recognizes that toxicity may be episodic and identification of causes of and reduction of sources of toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based, in part, on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

G. Ammonia Removal

1. Except with prior approval from the Executive Officer of the Regional Water Board, ammonia shall not be removed from bioassay samples. The Discharger must demonstrate the effluent toxicity is caused by ammonia *because of increasing test pH* when conducting the toxicity test. It is important to distinguish the potential toxic effects of ammonia from other pH sensitive chemicals, such as certain heavy metals, sulfide, and cyanide. The following may be steps to demonstrate that the toxicity is caused by ammonia and not other toxicants before the Executive Officer would allow for control of pH in the test.

a. There is consistent toxicity in the effluent and the maximum pH in the toxicity test is in the range to cause toxicity due to increased pH.

b. Chronic ammonia concentrations in the effluent are greater than 4 mg/L total ammonia.

c. Conduct graduated pH tests as specified in the toxicity identification evaluation methods. For example, mortality should be higher at pH 8 and lower at pH 6.

d. Treat the effluent with a zeolite column to remove ammonia. Mortality in the zeolite treated effluent should be lower than the non-zeolite treated effluent. Then add ammonia back to the zeolite-treated samples to confirm toxicity due to ammonia.

2. When it has been demonstrated that toxicity is due to ammonia because of increasing test pH, pH may be controlled using appropriate procedures which do not significantly alter the nature of the effluent, after submitting a written request to the Regional Water Board , and receiving written permission expressing approval from the Executive Officer of the Regional Water Board .

APPENDIX D: SUMMARY OF EXCEEDANCES, FOLLOW-UP AND ENFORCEMENT FOR INLAND DISCHARGERS

Name of Station	Receiving Water	N/DN	Effluent Exceedances 2000-2008	Total Violations Recorded	Total Violations with Enforcement Action	TIE/TRE Info
Burbank WWRP	Upper LA River	6/1/03	75	0	0	TIE began in January 2008.
Camarillo WWRP	Arroyo Conejo, tributary of the Calleguas Creek	1/22/07	17	10	9	
Camrosa WWRP	Conejo and Calleguas Creeks	None	1	1	0	
Carson BP Refinery "Watson Refinery"	Dominguez Channel	None	31	0	0	TIE/TRE. Discharge completed eliminated and transferred to waste water treatment system. (Annual Report with no date)
Dominguez Hills Tank Farm	Compton Creek to LA River	None	0	0	0	
Fillmore WWTP	Santa Clara River	None	21	16	3	
Foothill Feeder Power Plant	Castaic Lake Afterbay, Santa Clara River	N/A	0	0	0	
Glendale WRP	LA River	5/1/07	82	0	0	TIE began in May 2008 (not ammonia for sure since NDN already in place; a metal or volatile organic are currently suspected)
Hill Canyon WWRP	Arroyo Conejo, tributary of the Calleguas Creek.	3/1/05	5	1	0	
Long Beach WWRP	San Gabriel River	10/1/03	5	0	0	
Los Coyotes WWRP	San Gabriel River	10/1/03	37	0	0	
Ojai Valley WWTP	Ventura River	8/1/97	25	0	0	TIE/TRE for 2004 exceedances but cause of toxicity was not determined (alum, zinc, aluminum and others tested as suspects).
Pomona WWRP	San Jose Creek, San Gabriel River	10/1/03	87	1	0	TRE conducted May 2005. Toxicity in receiving water was determined to not be caused by the plant effluent. No source was indicated.
San Jose Creek WWRP	San Jose Creek and San Gabriel River	10/1/03	25	0	0	
Santa Paula WWTP	Ditch flowing to Santa Clara River	None	37	3	1	
Santa Susana, Boeing Field Lab	tributaries of LA River	None	2	0	0	
Saugus WWRP	Santa Clara River	10/1/03	91	0	0	TIE/TRE in 2004 found alum to be the cause; TIE monitoring again in 2005 because toxicity returned but unable to determine the cause.
Simi Valley WWRP	Calleguas Creek	9/1/04	15	2	0	
Tapia WRF, Las Virengas, Malibu Creek	Malibu Creek	in construction	0	0	0	
Tillman WRP	Upper LA River	September, 2007 (50%)	94	6	0	TIE from 02-05: toxicity mostly due to ammonia, but also partly to an additional non-polar organic compound. TIE initiated in 2005: cause likely ammonia. 2008 exceedances lead to accelerated monitoring which is showing that toxicity is being caused by metals and not ammonia.

APPENDIX D: SUMMARY OF EXCEEDANCES, FOLLOW-UP AND ENFORCEMENT FOR INLAND DISCHARGERS

Name of Station	Receiving Water	N/DN	Effluent Exceedances 2000-2008	Total Violations Recorded	Total Violations with Enforcement Action	TIE/TRE Info
Torrance ExMob Refinery	Dominguez Channel	N/A	17	5	0	TIE/TRE for stormwater and treated groundwater in 2003: the testing was inconclusive but determined it was not caused by the plant operations; most likely a positively charged organic molecule. In 2005: TIE for acute toxicity of stormwater, suspected a degreasing agent but inconclusive and discontinued due to depletion of stored sample.
Valencia WWRP	Santa Clara River	10/1/03	80	0	0	TRE/TIE in May 2007. Toxicity determined to be minor and episodic and no cause was determined.
Ventura WWRP	Ventura River	Not fully	13	13	8	TIE began in 2005. Zinc was determined to be the cause of the toxicity. The most likely source of the elevated zinc concentrations appeared to be periodic inputs to the plant from the service area.
William E. Warne Power Plant	Tributary of Santa Clara River	N/A	No tox testing required			
Whittier Narrows WWRP	San Gabriel River	10/1/03	3	0	0	

APPENDIX E: SUMMARY OF EXCEEDANCES, FOLLOW-UP AND ENFORCEMENT FOR OCEAN DISCHARGERS

Name of Station	Receiving Water	N/DN	Effluent Exceedances 2000-2008	Total Violations Recorded	Total Violations with Enforcement Action	TIE/TRE Info
Alamitos Generating Station	Pacific Ocean	N/A	4	1	0	
Avalon WWTP	Pacific Ocean	N/A	0	0	0	
Carson JWPCP	Pacific Ocean	N/A	17	0	0	
El Segundo Gen. Station	Pacific Ocean	N/A	0	0	0	
El Segundo Chevron Refinery	Pacific Ocean	N/A	2	0	0	
Harbor Gen. Station	Pacific Ocean	N/A	0	1	0	
Haynes Gen. Station	Pacific Ocean	N/A	0	0	0	
Hyperion WWTP	Pacific Ocean	N/A	9	4	0	
Long Beach Gen. Station	Pacific Ocean	N/A	0	2	0	
Mandalay Gen. Station	Pacific Ocean	N/A	3	1	0	A TIE was initiated in early 2002. Another TIE was initiated in 2007 and ended early; toxicity determined to be negligent.
Ormond Beach Gen. Station	Pacific Ocean	N/A	1	1	1	
Oxnard WWTP	Pacific Ocean	N/A	1	0	0	
Redondo Beach, AES	Pacific Ocean	N/A	1	1	1	
Rio Hondo Power Plant	Pacific Ocean	N/A	0	0	0	
Scattergood GS	Pacific Ocean	N/A	0	0	0	
Terminal Island WWTP	Pacific Ocean	N/A	63	12	0	TRE began in 2008. Source not determined yet.(toxicity is reduced by removing surfactants, metal detoxification, removing non-polar organics).
West Basin WWRP	Pacific Ocean through Hyperion Outfall	None	No tox testing required			